# THE REFINER AND NATURAL GASOLINE MANUFACTURER

## *In This Issue*


With the refiners at the annual get-together in Dallas on March 4-5-6.

Will take steps to combat misleading propaganda against oil industry.

Increased demand for fuel oil starts work on increasing yield.

What California plant men have done in the way of improved technique



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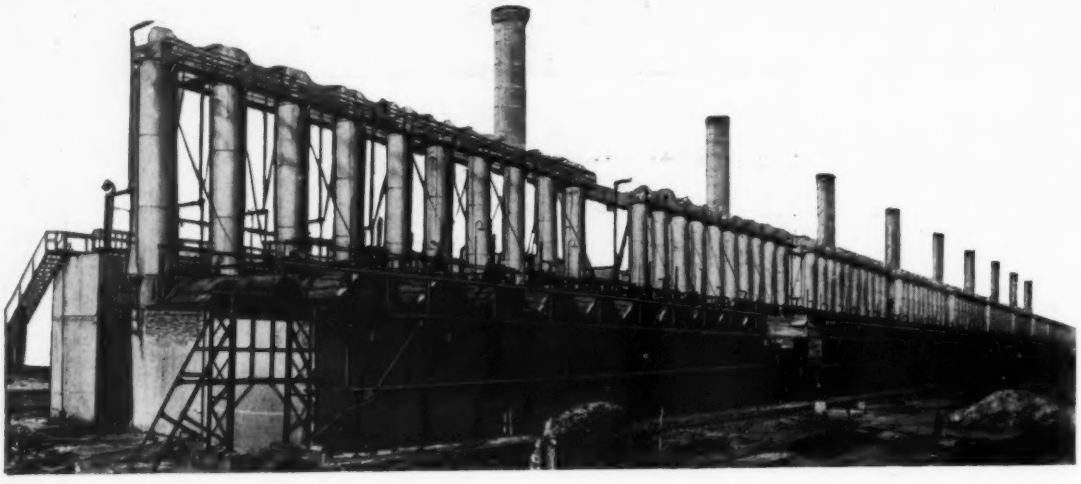

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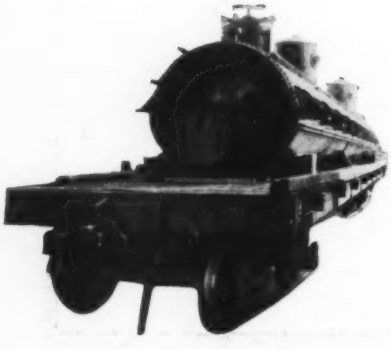

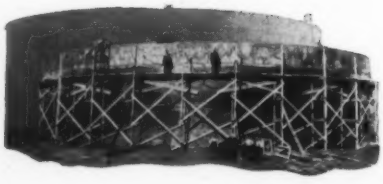

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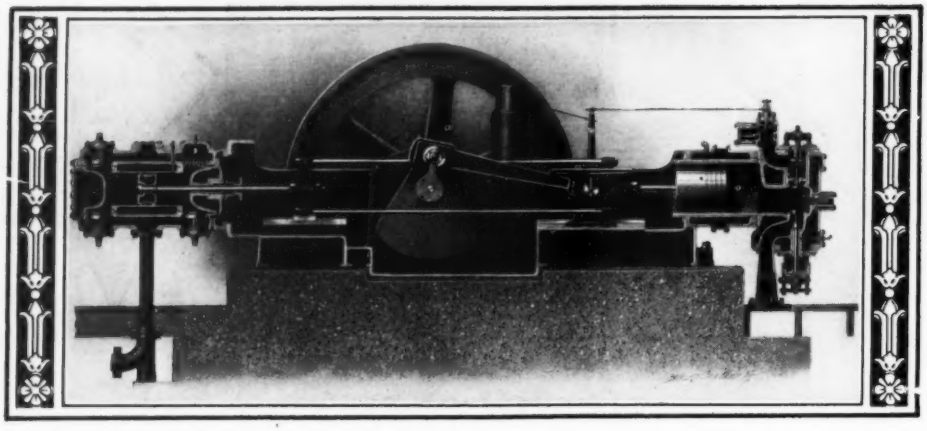

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For men engaged in the operating branch of the refining and natural gasoline business.

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R. L. DUDLEY..Manager and Editor

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# *Plain Truth*

Charges and counter charges have been hurled back and forth so much at Washington; ordinary business acts which any American citizen has a right to do have been given as the basis of charges of malfeasance in office; the truth has been so played with and distorted by representatives of the American people in the Senate and Congress, until the average citizen is so befuddled that he becomes nauseated every time his mind dwells on Washington.

When the "oil scandal" first began to occupy front page space in the newspapers, the average private citizen felt that in some way his government had received a raw deal. But it has been so clearly demonstrated that some of the people pressing the charges have so little regard for the truth, and so much regard for party politics, that the feeling is growing that maybe the whole damned thing is a Kilkenny cat scrap with half a dozen senators trying to steal enough fur to make a good political blanket.

If they will just keep the mess going a few more weeks, the oil industry will have nothing to fear. We have at Washington a pack of senators who, when oil is mentioned, throw up their heads and howl like a worn out hound dawg whose hunting time all his life has been spent in the quest of fleas on the sunny side of the house.

They howled and gave every indication of being on a warm trail, but they either found that the trail was a false one or they couldn't resist the temptation of running off after the first party rabbit which showed its tail.

All of which leads the public to feel that maybe the hound dawg didn't have anything but rabbit hunting in mind when he temporarily left his flea hunting.

The deal these senators are handing out is getting too raw. Their effusions of hot air are showing such a lack of the cooling influence of sincerity and truth that they are becoming more and more apparent in their real purpose.

There will be a kickback—already the signs of it are showing.

The oil industry has been hurt somewhat by the wild accusations which some of the senators have been indulging in, but these accusations have taken such a tinge of pure politics that already the injury is being lessened.

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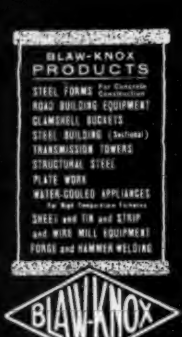


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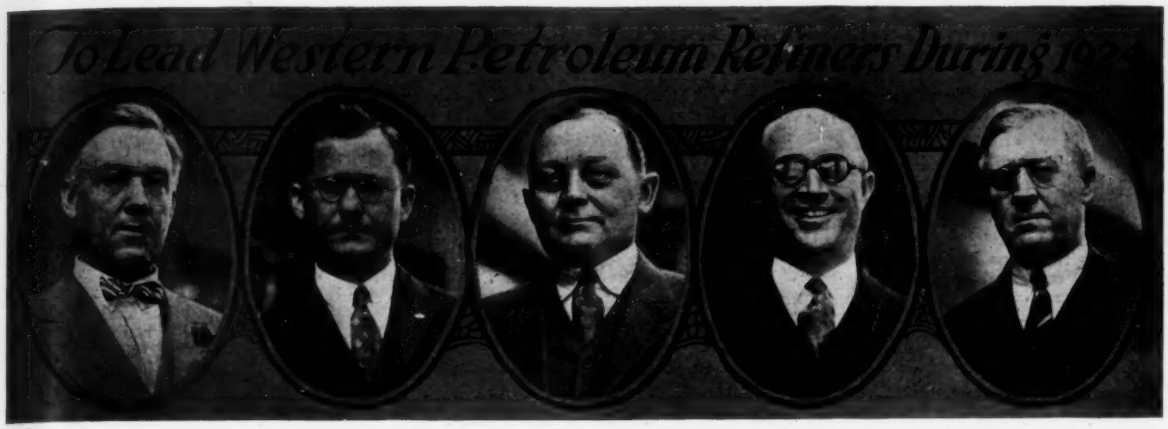


Officers elected at the Annual Meeting of the Western Petroleum Refiners Association at Dallas. Reading from left to right: Geo. D. Locke, third vice-president; Howard Bennette, managing director; F. A. Pielsticker, president; Roy B. Jones, second vice president and Pat M. Miskell, first vice president.

# Refiners to Combat Misleading Propaganda

## Tentative plans made to let public in on "secrets" of industry's methods and policies

*By Spencer W. Robinson*
*Associate Editor*

**Dallas, Texas.**—Letting business of a personal nature and of less importance take care of itself temporarily, refiners attending the annual meeting of the Western Petroleum Refiners' Association turned their attention toward the more serious problem offered by the situation at Washington.

The urgent need of an aggressive educational campaign to counteract the prejudice being wrought in the mind of the general public by the wave of investigations now under way by both national and state legislative bodies, was emphasized by almost every speaker at the meeting held here March 4, 5 and 6.

Following the three day session, the executive committee of the association took the matter under advisement and promise of some definite action in the near future is assured from this source. Just what steps can be taken by the committee is problematical but it is believed that the course already taken by several associations will be followed.

No official announcement was given out as to the suggestions taken under advisement or of plans tentatively proposed but it is believed that any action taken by the association will be one of constructive publicity.

The presentation of the true facts on the oil industry to the public is expected to serve a two-fold purpose, as it would also allay the agitation of those seeking to place the industry under governmental regulation.

Fayette B. Dow, counsel for the Western Petroleum Refiners Association at Washington, told the gathering of efforts now being made against the industry at large in both divisions of congress and the necessity for immediate action at this point. Mr. Dow also added that it would be possible to sway the opinion of the law makers at Washington to the favor of the industry should proper steps be taken.

Through its representation at Washington the association is keeping in close touch with the situation, according to Mr. Dow and should be able to do much good from that source.

In talking on the "Relation of the Producer and Refiner" W. H. Gray, president of the National Association of Independent Oil Producers, touched upon the unsatisfactory effect the present political condition at Washington is having upon what would otherwise be one of the best periods yet to be experienced by the industry.

Mr. Gray's remarks along these lines summarized are:

"Again the political situation is having its effect on the general industrial situation and particularly is this true of the oil industry, which is coming in for a great deal of very unjust criticism, due to the ghastly mistake of some of its heretofore leaders in grabbing the Naval Reserves of the country without competitive bidding. The Republican control of congress has passed. While they still have the presidency it is apparent that they, as an organized party, control neither branch of congress.

"With politics so chaotic and uncertain, leaders of both parties being discredited every day it behooves the industry to put its house in order. Fortunately for the oil industry, we have a fine year ahead of us in which to do this and let me plead with everybody in it, whether they be great or small, to do this very thing."

Mr. Gray also urged that all oil trade associations get together for a co-operative scheme to advertise the industry to the public.

The annual meeting of the Western Petroleum Refiners here was honored by the attendance of several men from the Department of Justice. Mr. W. E. Cable, representing the department at Washington, and Mr. Frank V. Martinek, with the department at Chicago, were present and attended all sessions of the convention with considerable interest.


## Executive Board

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F. A. Pielsticker, vice president of the Skelly Oil Company, El Dorado, Kansas, president; P. M. Miskell, general manager of Empire Refineries, Inc., Tulsa, first vice president; Roy B. Jones, president of the Panhandle Refining Company, Dallas, second vice president, and George D. Locke, vice president of the Barnsdall Refining Company, Chicago, third vice president.

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# Optimism Prevailing Note at Dallas Meet

## Big attendance at business sessions during three days — Pielsticker chosen president

*By H. H. King*
*Staff Representative*

**Dallas, Texas.**—The business sessions held during the three day convention of the Western Petroleum Refiners Association starting here on March 4, drew a larger attendance of members than has been experienced in previous years, and a noticeable atmosphere of optimism prevailed among those in attendance. Predictions that the balance of this year would prove to be a prosperous one for the refining industry were made by practically all speakers.

However, leaders of the industry sounded warnings as to the danger of a repetition of last year's "flooded markets," unless stocks of crude and refined oils were held down in proportion to the prevailing demand.

### New President

F. A. Pielsticker, vice president of the Skelly Oil Company, El Dorado, Kansas, was elected to serve as president of the association for the ensuing year, succeeding George N. Moore, president of the Moore Refining Company, Chicago, Ill., who retired after completing two successful years as the head of the organization. P. M. Miskell, general manager of Empire Refineries, Inc., Tulsa, Okla., was re-elected first vice president, and Roy B. Jones, president of the Panhandle Refining Company, Wichita Falls, Texas, was also chosen for the second time to serve as second vice president. George D. Locke, vice president of the Barnsdall Refining Company, Chicago, Ill., was elected third vice president.

The opening session of the meeting followed a luncheon Tuesday, and was presided over by Roy B. Jones. The annual report read by President Moore briefly outlined the association's activities during the past year, and thanks were expressed for the loyal support given by the membership and employes during his administration, which was probably the most strenuous and eventful in the history of the organization due to the adverse conditions that existed in the refining industry in 1923. "The membership is exceedingly unfortunate in having secured the services of their present efficient force," declared President Moore. "The handicap experienced by Secretary Howard Bennette in taking up the work in the middle of the year, and also the additional handicap of transferring the headquarters of the organization from Kansas City to Tulsa has been overcome and he is now carrying on the work most efficiently and satisfactorily." President Moore praised the work performed by H. K. Davis, statistician; P. A. Conway, commerce counsel; Fayette B. Dow, counsel in charge of the Washington office; and Ed. P. Byars, Texas traffic representative, and asked that the membership give the new administration and the employes the same co-operation and support accorded during the past year.

Higher crude prices were predicted for 1924 by W. H. Gray of Tulsa, president of the National Association of Independent Oil Producers, in his speech on "The Relation of the Producer to the Refiner," delivered at the first business session. The demand for crude today is the greatest that it has ever been in the history of the United States, and the crude prices now quoted are not compensatory to the producer, except on high gravity oil, which constitutes a very small percentage of the whole, according to Mr. Gray. Crude prices should be advanced as soon as possible to the cost of oil in storage, and refined oil should be advanced to correspond, while great precaution should be taken not to bring on a repetition of the disastrous years of 1921 and 1923 by turning wildcat operators loose and building up stocks of crude and refined products beyond the demand. Mr. Gray departed from the text of his address to sound a note of warning to the refiners of the necessity of all branches of the industry combining their efforts immediately to fight the feeling of prejudice being created in the minds of the general public against the industry because of the widespread notoriety given investigations of alleged malpractices of some members of the industry.

### Nicholas Talks

L. V. Nicholas of Chicago, president of the National Petroleum Marketers Association, delivered an address on "The Relation of the Jobber to the Refiner," following the luncheon for the refiners held on the second day of the convention. Mr. Nicholas pointed out the evil that is done to the jobber as well as the refiner when the market becomes overstocked with gasoline and the product reaches a distress stage, and recommended that closer co-operation and a better understanding be developed between the two branches of the industry.

The Magnolia Building at Dallas, Home of the Magnolia Petroleum Company

"The Future of Fuel Oil," was the subject of an interesting paper prepared and read by H. W. Camp, general superintendent of Empire Refineries, Inc., Tulsa. "The refining industry must develop a market for fuel oil, which represents 49 per cent of the crude oil yield, and to establish that market on a firm basis by going out and studying the problems in conjunction with the use of fuel just as it has in preparing specialized markets for the sale of gasoline and other refined products." The paper contained a general discussion of the manufacture, transportation and various uses of fuel oils, and carried a number of tables and figures of comparison worked up by Mr. Camp.

Invitations for the refiners to participate and attend the International Petroleum Exposition and Congress to be held in Tulsa October 2 to 11 were extended by E. F. McIntyre, general manager, and a general description was given of the new site that has been acquired to stage the show.

Chas. W. Briles, Oklahoma state director of vocational education, was presented just before the close of the business session Wednesday and offered suggestions that the association co-operate with the federal board and state departments of vocational training for instructing and training men for occupations of the refining industry.

Wednesday evening the refiners motored out to Brook Hollow Club, where they were the guests of Dallas oil men and entertained at a stag barbecue, followed by a genuine battle royal by a quintet of East Dallas negroes. The negro fights were superceded by a dog and badger fight, and W. A. Tracey, who recently took charge of the Dallas office of the Sinclair Refining Company, pulled the rope that liberated the badger from his cage, and later declared the fight a draw. The wives of the members and guests were entertained with a theater party while the Brook Hollow Club party was in progress.

### Business Session

The morning session of the final day of the convention convened shortly after a 9:30 breakfast, with President Moore presiding. W. G. Lackey of Ponca City, Okla., vice president, Marland Refining Company, delivered a talk on "Petroleum Refining from the Financial Viewpoint," which dealt on the needs of sound business management to make a successful refining organization. Refiners must look ahead and prepare themselves for adverse market conditions, and take advantage of the periods of low priced crude by storing oil for an upward trend.

H. G. James of the Derby Oil Company, Wichita, Kansas, delivered a well prepared paper on "The Independent Refiner," giving a general outline of the early history of the independent refiners' activities and the vastness of the investment that the refining industry represents in this country. The independent refiners are spending huge sums of money annually to bring about

(Continued on page 20)

# "Good Year Ahead, But Don't Go Too Fast"

## Same problems encountered in early part of 1923 confront refiners now

*By George N. Moore*
*Retiring President of the Western Petroleum Refiner's Association*

AT our last annual meeting held at at Galveston about one year ago, we were all exceedingly optimistic over the prospects for reasonable profits during the balance of the year in the refining branch of the industry. I do not recall during that meeting, of hearing even one pessimistic opinion regarding the immediate future of the refining business. None of us had the slightest fear of the results of the consuming season of 1923. In many respects, our calculations were correct. The increase in consumption as accurately predicted by our own statistical department, did come and the refiners collectively did more business, i. e., they refined more crude oil and sold more products than in any year in their history. It is most lamentable that the year was financially disastrous to the refiners as a whole, in spite of this large increase in business.

### Had a Chance

I have already stated publicly, that the year might have been profitable for the refiners instead of unprofitable. One of the principal causes of our financial disaster was our entire disregard of the actual needs of the consuming public. This was plainly evident by the wild scramble to manufacture gasoline in excess of the amount that could be sold at a profit. We all preferred to believe the summer consuming season would create a demand for all of our stocks plus all we could manufacture, but when July came and we were still without the extraordinary demand that we all so confidently expected, it was apparent that those of us who needed money must try to sell our gasoline in storage at the best price obtainable, regardless of what effect our action would have on the industry as a whole. There came a desperate selling campaign, costs were disregarded, the refining industry set about to realize what cash it could from an overstocked supply. This campaign brought the tank car price to such a low level, that a reduction in the retail price was inevitable. The larger companies, by holding a fair retail price, the consuming public, as effort to obtain at least cost for their exceptionally large inventories.

### Much Agitation

On account of the low wholesale price, brought about as previously stated, and the maintaining of a fair retail price, the consuming public, as well as some politicians became greatly agitated and have accused the oil industry of unfair ethics and practices.

If there has been any unfairness, it has been to the industry itself. By a combination of circumstances, the industry was made to suffer and to supply the products to the consuming public at ruinous prices which were very much below cost.

From a comparison of the crude price structure for the years 1921, 1922 and 1923, it seems reasonable to assume the refiners themselves are at least partly responsible for the acute depressions they have suffered since 1920. During the winter months we are full of optimism and predict unusually large consumption increases for the summer months. For the three years above referred to, we have undoubtedly been too optimistic in our belief that high premiums could be paid and fair profits realized when we reached the real consuming season. This logic may be all right if it were not overdone. Paying excessive premiums has a tendency to bring about higher posted prices and has caused the smaller refiners to manufacture quantities of gasoline in excess of their daily shipments, and in nearly every case, when the financial burden becomes acute, these refiners found it necessary to turn accumulated storage into cash at a time when the market could only absorb this excess at bargain prices.

### Crude Price Low

For the past three years, we have had very serious reductions in crude prices during the mid-summer months. On June 15, 1921, the posted price for crude in the Mid-Continent field was $1.00 per barrel; on August 2, 1922, the posted price of crude was $1.25 per barrel, while in 1923, the price declined all summer and reached its low point of $1.00 per barrel on November 8, and this in the face of the greatest consuming year for gasoline that has ever been known.

In my opinion there is a similarity of conditions in the early months of last year as compared with the early months of this year. Are we not now repeating our serious errors of last year? The refiners are engaging in another wild scramble for crude and are manufacturing gasoline in excess of the demand. Wholesale prices are weak and once more the industry will be criticised in the face of another disastrous financial loss to themselves. Probably the one saving grace in the present situation, as far as the refiners are concerned, is what appears to be a temporary shortage of crude. Stimulation in crude prices early last year caused increased drilling and a subsequent overproduction. Undoubtedly this increase in production was one of the contributing causes of the disaster that followed.

This year, we are confronted with a similar increase in crude prices, as well as advancing prices for by-products. There is every justification for this condition because the production is declining in nearly all of the important fields, and also because the present crude prices provide only a moderate profit for the producer; nevertheless, this stimulation in crude price may bring about an overproduction as was the case a year ago. Even though history repeats itself in the matter of crude, there will be no justification for the refiners repeating their errors of last year and manufacturing gasoline in excess of the current demand, to their own financial detriment.

Refined prices, both wholesale and retail, have not yet responded to the increased crude costs, and the industry cannot look for better conditions if they persist in forcing their products on an oversupplied market. In my opinion, the consuming public gain temporarily at the financial loss of the industry which was the case last year, but in the end, the public will have to make up the losses of the industry to assure them of a continued supply of a very necessary product. Therefore, if there was any possibility of a stabilized price condition, it would work to the good of the public as well as to the industry. It is equally interesting to study the gasoline figures for the past few years. Very recently, the figures for 1923 were published by the Bureau of Mines. Our domestic consumption in 1923 was in excess of 6,685,000,000 gallons, an increase over 1922 of more than 1,313,000,000 gallons. Our exports increased over 276,000,000 gallons in 1923 over 1922, while we imported in excess of 100,000,000 gallons more in 1923 than in 1922. The amount manufactured in this country, according to the Bureau of Mines, was nearly 7,556,000,000 gallons. As some of the oil writers have already pointed out, the amount we added to storage was almost identical with the amount imported, or approximately 190,000,000 gallons. The increase in consumption in 1924 over 1923 will have a decided bearing on the prosperity of the refining business this year. I have heard many estimates of this increase from students of petroleum figures, all of which vary to a considerable extent. Undoubtedly our prosperity will depend largely upon the condition of business in general, as well as the increase in the automobile registrations.

### Good Prospects

We are also largely affected by weather conditions, therefore, it is extremely hazardous to venture any prediction as to the amount that will be consumed in the future. It seems fair to conclude that if we do not manufacture more gasoline in 1924 than was made in 1923, we will have a healthy condition. Gasoline was manufactured during 1923 in fairly equal monthly quantities. If it were manufactured more in line with the consumption figures, less difficulty would be encountered in obtaining prices in proportion to cost. There seems to be no occasion to add even a gallon to the present storage. I believe, however, that our present stocks are entirely justified and should be maintained for the protection of the public, principally because of the unknown and hidden supply of raw materials from which this important product is made.

The larger and stronger companies are to be commended for their farsighted and unselfish policy in maintaining these stocks against the time when, for temporary periods at least, the product would not otherwise be available. Some of these larger com-

# What Can Be Expected From Export Market?

## Many refiners now looking toward foreign situation for business during the summer

*By Leland V. Stanford*

*Before Western Petroleum Refiners' Ass'n. at Dallas*

IN ASSIGNING to me the subject "Export Markets for 1924," I presume it was the thought of the committee in placing this subject on the program that you would be interested not in a report submitting a large mass of figures which would only be estimated, but you would prefer, rather, a few remarks that might help a little as to your own ideas as to what the current year will do with reference to export, particularly so as to volume and prices.

Every one here is fully conversant with the present condition of the Petroleum Industry with reference to the United States. You know the approximate quantity of crude being produced and the quantity of the various products produced therefrom. You have seen the market prices advancing, and all of us, after a long period of great depression, are now beginning to take on a little smile with the thought that the tide surely has turned and our ledgers will begin to show figures in black to offset those written therein in red during the past year.

What we see and know to be existing in our immediate vicinity, naturally has a bearing on what is happening or may be expected to happen with reference to our exports. Yet, we must not overlook the all important fact that while foreign trade always has a keen eye on what is happening in the United States and our production and our prices are certainly reflected in their market, nevertheless, there are many other factors outside of the United States that have their bearing too. Sometimes it is very difficult to understand, how, in certain foreign countries and particularly in Continental Europe, the conditions of the petroleum industry, at times, is no different in countries whose borders even touch each other.

We know of concrete cases where the industry in one country, is doing a large volume of business at a fair margin of profit, while, in the adjoining country, whose geographical center is only a few miles from the center of its neighbor, is selling at prices even so low as to be under actual cost of manufacture where the oil is secured, namely, in the United States; in fact, so low that when we consider their legitimate handling expenses, they are not only giving their products away, but paying the customer a sum in addition. I do not see how such a state of affairs can be attributed to economic conditions within these countries, but rather to a lack of co-operation between the various European importers.

In our own domestic business, due to the fact that we are a complete unit in ourselves, having production, refining and marketing facilities adequate for our own consumption, and in reality are not dependent on any outside factor, when there is a change in prices, whether up or down, such a change is felt immediately in practically every state, but the same does not follow in the export business. There are times when our domestic markets have advanced, and concurrently, we have seen a decline in the export prices.

Nineteen twenty-three was, I am sure, very satisfactory to all exporters with reference to volume, but, not as to revenue. Nineteen twenty-four, though starting off with prices that are somewhat below those for the same period a year ago, promises, in my estimation, to show greater returns when the year has been completed. The fact that low markets prevailed in the United States during the past year undoubtedly had its effect on the increased consumption abroad.

In considering the future, it is well to review briefly what the total volume of our petroleum exports has amounted to during the past two years. The following figures taken from the report as compiled by the United States Department of Commerce, show clearly the volume of each product exported. Comparing 1923 with the similar report of 1922, it is found that there were 845,693,000 gallons of gasoline exported in 1923 as against 579,062,000 gallons exported in 1922, or a gain for '23 of approximately 46 per cent.

Kerosene for '23 was 847,929,454 gallons as against 895,231,000 for '22, or a loss of approximately 5¼ per cent.

Gas and fuel oil for '23 was 1,228,594,295 gallons as against 697,219,000 for '22, or a gain of approximately 76¼ per cent.

Lubricating oils, all grades, 1923, amounted to 348,420,523 gallons as against 331,352,000 gallons for 1922, or a gain of approximately 5⅛ per cent.

One very important factor that the American exporter must now consider is the present position of the Petroleum industry in Russia. For quite some time Russia has been striving very hard to again take up her position in the world petroleum trade. During the past six or eight months, Russian Oils have been offered and sold in limited quantities to many European buyers. She now finds herself in position to offer much larger quantities of gasoline, kerosene and lubricating oils and the very fact that these oils are available in Russia will certainly reflect back, to some degree, on the volume of petroleum products that will be exported from the United States.

Freight rates on shipments abroad necessarily have a direct bearing on export sales. At our convention last year, held at Galveston, when it was my privilege to address you, statement was made that due to the increased freight rate on cargoes shipped in bulk, particularly so of lubricating oils, it might be expected that shipments of such oils in barrels would materially increase. A comparison of freight rates as to shipment in bulk and shipment in barrels might be of interest at this time. The present rate from North Atlantic ports for shipment of lubricating oils to United Kingdom and Continental ports, is on an average of $1.50 per barrel of 50 gallons or approximately 3.1 cents per gallon for the oil less the weight of the barrel. The charter rate on tank ships to United Kingdom and Continental ports is near 45 S. per ton, which equals also 3.1 cents per gallon, or the same rate as assessed by steamship lines carrying general cargo. In comparison of these rates, the conclusion can be drawn that in shipping in barrels the real advantage appears that the

(Continued on page 36)

panies are already concerned about the supply for the consuming public in 1925 and 1926, and I think it only fair to them to state that were it not for the moral responsibility they feel to the public, they would not concern themselves for the protection of the public. Also, in my opinion, the smaller companies are just as much a necessity in the present scheme of things as are the larger companies. Without the smaller refiners, as largely represented in the membership of the Western Petroleum Refiners Association, the public could not be so conveniently or economically served. The smaller companies when considered as a whole, are real competitors of the larger companies, and it is to the interest of the public to see that they prosper and are able to function, not only to maintain this competition, but to assure them of a continued and convenient supply.

A most important problem for our association work is that of freight rates. For some unexplainable reason, the Mid-Continent group of refiners have, in my opinion, been seemingly overlooked by the carriers in the rate making structure. While it is unfortunate that the association cannot act officially for all interests in this apparent inequality now suffered by the Mid-Continent refiners, it is obvious that the respective groups through their traffic representatives, can materially assist in urging a modification of the existing rates. I am sure you gentlemen are as conscious as I am that there are many additional problems of equal if not greater importance to the membership of this organization. It seems hardly necessary to say that to accomplish the results expected of an organization of this kind, there must be absolute confidence, cooperation and support from every individual and company in our branch of the business.

I am certain that you all will agree that the oil industry is passing through a crisis entirely unlike any previous experience, and while there is no question in any reasonable man's mind that we shall emerge triumphant, the situation calls for absolute and unqualified co-operation by every individual and unit in our industry. I am positive that the Mid-Continent refiners as a whole will do their duty to this organization in carrying on to a successful solution, the task assigned to it.

# Fuel Oil Market Will Have to Be Developed

## With increased demand efforts are being made to improve methods of production

*By H. W. Camp*
*General Superintendent Empire Refineries, Inc.*

THE oil industry has been repeatedly accused of showing a lack of stimulus and far sightedness in creating a market for its wares, particularly fuel oil. A more direct accusation is its lack of co-operation with designers of fuel oil burning equipment in attempting to further its own interests. This may all be true and it has probably cost the oil industry millions of dollars. But, ignoring the past, let us deal with the immediate and future problems and no longer delay a better understanding of the true conditions surrounding both the fuel oil manufacturer, and the expectant consumer together with those connected with the design and sale of oil burning equipment as well.

### Three Users

Fuel serves three major purposes, namely: Supplying power in transportation, power and heat in the production and fabrication of manufacturers materials and supplying comfort to our homes during the winter months. Oil has found a use in each of the above but only to a very limited extent. Fuel users have been deprived of knowing that oil is not only a more convenient fuel, but, frequently, a more economic one as well. It took a long, hard fight for the recognition of this truth in the maritime world but that fight is rapidly being won, since the largest and fastest ships are now oil burners. And it took the shock of a threatened coal famine, during the recent coal strike, to bring the railroads to attention. Nevertheless, we must recognize transportation ahead of the other two classes in naming the pioneer large scale user.

The belated use of fuel oil by the industries has probably been due to their complex needs requiring more exacting fuel oil specifications. It appears that we have been content to allow these industries to continue their old practice of ignoring the advantages of the use of fuel oil; supplying those who had worked out their own problems and allowing the balance of our production to be thrown on the market at whatever price it would bring. It is with this classification of users that the oil industry should extend its greatest efforts.

Introducing itself almost over night and probably with a stronger determination than the former two classes, is the household burner. Almost independent of the refiner, over two hundred (200) kinds of burners have been designed and placed on the market using various kinds of fuel. It is here that an understanding is most important between the burner designer and the oil industry to obtain a maximum, ultimate, mutual advantage.

Thus, I have briefly outlined the three classifications of fuel users with whom the oil industry must deal, and an attempt will be made to analyze the needs of each and to determine the effect of certain probable developments in future refinery practices.

Naturally, the refiner adjusts yields within limits to gain the greatest realization per barrel of crude run and this, in turn, is dependent upon prevailing prices. And, unless something unforeseen happens in motor design, gasoline will continue to be the most valuable crude oil constituent. This fact is further strengthened by the increased number of automobiles predicted for the future. It is true, however, that this increase in the number of cars will not mean a proportionate increase in the amount of gasoline used for no doubt there will be improvements made in the motor design to give greater power and mileage per gallon of gasoline.

With the future bidding fair for a maximum gasoline yield, every means of increasing this yield will be sought by the refiner, and the two developments that appear most logical are the increased use of cracking stills and improved fractionation efficiency.

### Yields on Crude Run at Refineries of U. S. in 1923

To best picture conditions of today, after reviewing government statistics, it is seen that the average yields on the 1,623,000 barrels of crude oil run daily at the refineries of the country are as follows:

| | Barrels | Pct. |
|---|---|---|
| Gasoline | 493,000 | 30.4 |
| Kerosene | 153,000 | 9.4 |
| Gas Oil and Fuel Oil | 787,500 | 48.5 |
| Lubricating Oils and Cylinder Stock | 71,500 | 4.4 |
| Miscellaneous Oil and Fuel Oil burned at the Refineries | 66,000 | 4.1 |
| Loss | 52,000 | 3.2 |
| Total | 1,623,000 | 100.0 |

There are approximately 225,000 barrels of gas and fuel oil cracked daily and the resultant products are included in the above yields. With an average breakup on this cracking stock of

| | |
|---|---|
| Gasoline | 55% |
| Kerosene | 5% |
| Fuel Oil | 33% |
| Loss | 7% |

the gas and fuel oil production would have been 938,250 barrels daily or 58% of the crude oil instead of an actual yield of 48.5% had no cracking been carried on.

Thus it is seen that 24.0% of the gas oil and fuel oil which normally would be yielded is now being cracked.

### Probable Yields With Increased Use of Cracking

Should the increase in cracking be continued, in ten years 500,000 barrels of gas oil and fuel oil will be cracked daily, representing 53% of the normal yield of gas oil and fuel oil without cracking. As a result, the gasoline yield will be enhanced principally at the expense of gas oil and the daily yield sheet will appear as follows:

| | Barrels | Pct. |
|---|---|---|
| Gasoline | 644,000 | 39.6 |
| Kerosene | 167,000 | 10 3 |
| Gas Oil and Fuel Oil | 603,000 | 37.2 |
| Lbr. Oils and Cyl. Stk. | 71,500 | 4.4 |
| Misc. Oils and Fuel Oil burned at refineries | 66,000 | 4.1 |
| Loss | 1,000 | 4.4 |
| Total | 1,623,000 | 100.0 |

Thus, the gas oil and fuel oil yield will be decreased 184,500 barrels per day from that of today's production or cut to 77% of today's output. There will probably be an increased amount of crude run at the refineries, depending, however, on whether or not the increase in gasoline consumption will exceed the increased yield of gasoline from the present crude runs due to the cracking and increased tower efficiency the greater power efficiency in the motor itself.

### Cracking Will Not Seriously Reduce Fuel Oil Production

Consequently, there can be no well founded thought that the increased use of cracking will seriously reduce the fuel oil available for consumption. Obviously, this decrease may be easily made up by the increased production of low gravity crudes, particularly in Mexico, Venezuela and several fields within our own country. In fact, these fields remain undeveloped for want of a market. It is true, however, that there will be a decrease in production of gas oil of about 164,500 barrels per day which will not be replaced, unless those industries needing this quality of oil are not able to substitute heavier oils and are willing to pay the price equivalent to the value of the gas oil as cracking stock.

### Classified Consumption of Fuel Oil in 1923

Coming back to the three classes of users, an effort has been made to ascertain a break up on last year's fuel and gas oil consumption, among these users including a detailed break up on each class wherever possible. The following tabulation includes the approximate consumption of the respective divisions:

| | Barrels Daily | Barrels |
|---|---|---|
| Transportation— | | |
| Railroads | 120,000 | |
| Ships | 104,000 | |
| Total | | 232,000 |
| Industries— | | |
| Manufacturing | 357,000 | |
| Public Utilities | | |
| (Fuel Oil) | 40,000 | |
| (Gas Oil) | 55,000 | |
| Total | | 452,000 |
| Heating | | 3,000 |
| Exports exceeding imports | | 62,000 |
| Storage | | 15,000 |
| Miscellaneous and unaccounted for | | 23,500 |
| Grand total | | 787,500 |

Thus the production of fuel oil is accounted for as estimated by the Department of the Interior of the United States.

### Transportation

As outlined previously, transporta-

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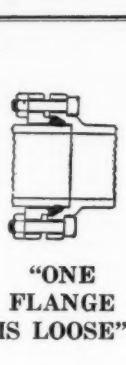
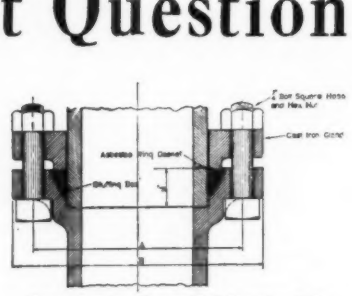


"ONE FLANGE IS LOOSE"

## Settles the Rust Question



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tion used 232,000 barrels of fuel per day, 128,000 barrels of which were consumed by the railroads and 104,000 barrels by ships. The consumption shown for the railroads was obtained by reviewing reports issued by the Bureau of Statistics of the Inter-State Commerce Commission, and the figure showing the consumption of ships was obtained from the Survey of Current Business, edited by the United States Department of Commerce. It is readily seen that transportation is playing a great part in the use of fuel oil. Of the above amount consumed by the railroads, approximately 30 per cent was Mexican fuel oil which further points out the important part which foreign fuel oil production plays even today, in filling the needs for this commodity.

The justification for the railroads in the increased use of fuel oil has been briefly outlined in a paper read by Mr. J. N. Clark, chief supervisor of the Traveling Engineers of Chicago, when he pointed out the following advantages. He says: "Fuel oil, unlike coal, varies little in heat value, averaging 18,750 B. T. U.'s per pound. For the same number of heat units, fuel oil weighs approximately 30 per cent less than coal and occupies only 50 per cent as much space. Some modern oil burning locomotives have an oil capacity equivalent to more than forty tons of coal which allows a greater haul before fueling. A 750 ton oil burning train may travel over 650 miles without fueling."

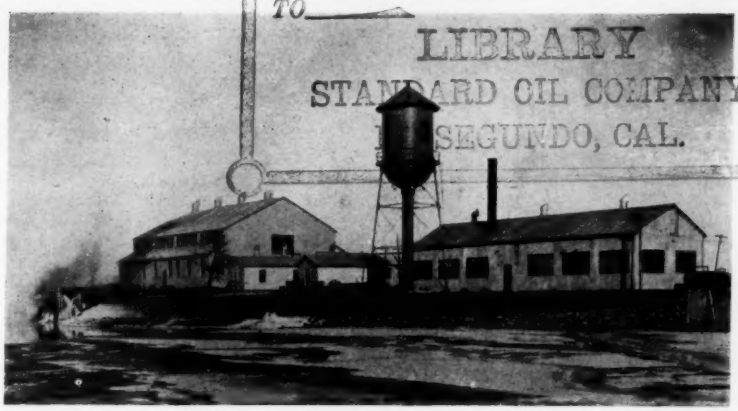
These factors, together with the economic advantage in the price of fuel oil made possible by its distribution over the United States, are the reasons for the increased use of fuel oil by the railroads. Likewise, in studying the history of the adoption of fuel oil by the railroads, it is interesting to note the manner in which they shaped their choice of an oil to burn, by adopting a burner to use oil of a heavy gravity, as from an 18-22 degrees Baume. By this choice, they have made a double saving —first, this lower gravity oil contains more heat units per gallon, and second, its price is substantially lower per gallon. Thus, with the firm basis on which the railroads have placed their choice, future increases may be made by them in the use of fuel oil, and yet they are assured of an ample supply at all times.

The ship builder, fortunately, has made a similar choice. In addition, however, the development of the Diesel engine for maritime work has supplied a considerable market for a light gravity fuel oil as from 26-34 degrees. Gradually, however, these engines are being designed to burn heavier fuel oil in line with refinery developments, and, no doubt, equally efficient and probably more economic performance will be had in the future through this development.

Thus it is seen that an ample supply of fuel to meet the needs of our carriers is guaranteed as the production of that quality of fuel needed will not be lessened, and, in fact, the amount could probably be increased several times should the needs warrant development of the fields previously mentioned.

### Industries

The industries are our greatest consumers, the manufacturing industry using approximately 357,000 barrels of fuel daily, public utilities 40,000 barrels of fuel oil and 55,000 barrels of gas oil. The former figure was derived from a break up on fuel oil consumption suggested by Joseph E. Pogue in his book entitled "The Economics of Petroleum," while the latter figure was taken from statistics issued by the Department of Power Resources under the Geological Survey. Fuel oil was adopted by many industries first, because of of its adaptability to exactly fill their particular needs, some of these being the steel, ceramic, sugar, lime, glass, copper and food industries, as well as many others.



The new gas compressing station recently built by the Empire Gasoline Co. at Cambridge, Kansas.

In the steel industry, oil is especially attractive for large mold-drying ovens for it is seen that these molds may thus be dried 50 per cent more quickly and more thoroughly than when coal, coke or gas are used. The steel industry, like many others, depends largely upon heat treatment for the quality of its products. In this, oil is surpassed, by only one source of energy, that being electricity. The limiting factor, however, in the use of electricity as a source of heat has been its cost and only in the case where the finest control is exercised to guarantee the quality of the product, may this be used.

In the operation of the furnaces themselves, fuel oil proves of greatest advantage because of the intense heat that can be immediately generated, and a corresponding reduction in time required to get the charge ready for tapping. There is no consequent handling of fuel and ashes, therefore, the coal passers are dispensed with; these having always proved an expensive item in this industry. Likewise, there is a saving in floor space, the oil tank being kept under ground in place of the former coal bins. It is said that the furnace brick lining lasts 20 per cent longer, which in itself will prove quite an item over a period of a year, both in increased duration of running, and in decreased cost of replacements.

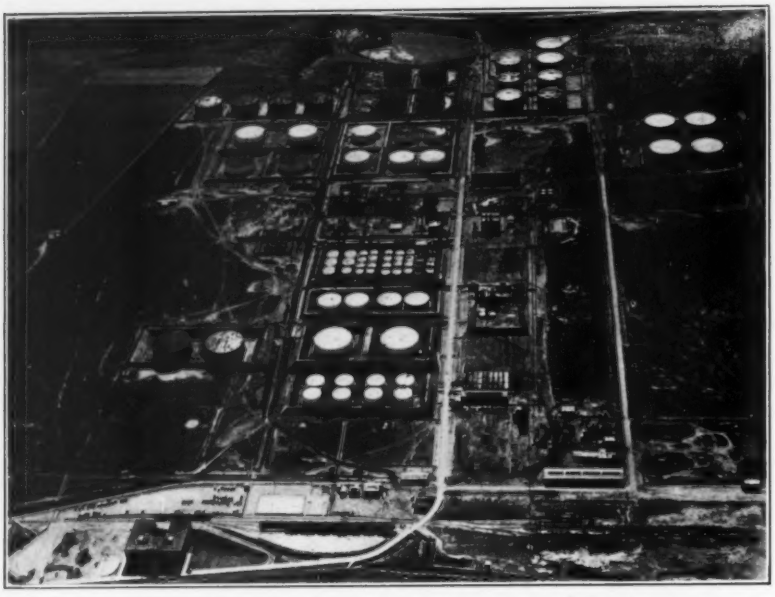
The forge shop, likewise, needs a clean fuel capable of sufficient regulation to give various temperatures, and nothing can economically compete with oil for this use. Many times welds must be done in places where equipment has been set up, and it would be a laborious task to build a furnace around the piece should coal or coke be used. This is in contrast to the convenient oil burner which may be transported to any part of the shop in very little time. In the boiler shop, as a part of the steel industry, the oil burner proves to be particularly convenient in bringing the boilers rapidly to pressure under test. Likewise, the boilers can be tested at any part of the shop, the burner and tank being easily transported from place to place.

The ceramic industry, also, was quick to recognize the advantages of fuel oil, and fuel oil has played a large part in the improved products of this industry as well as in the increased use and kinds of these products. Owing to the fact that the temperature can be controlled so accurately in the brick, terra cotta and pottery kilns, fuel oil has been adopted almost universally for use there. In the operation of the kiln, a low, steady temperature must be maintained until all of the moisture, technically known as "water smoke" has been removed from the clay before the high temperature may be reached, and the use of fuel oil for close regulation has met this need.

The choice of fuel oil in the sugar industry has been made because it may be interchangeably used with the refuse fuel called "Bagassee" which consists of the cellulose material admixed with glucose as the residual offal of the process. It is common practice to burn this liquid fuel with the same burner as the fuel oil; also, this interchangeable practice is convenient for, at times, it is necessary to preheat the fire box with fuel oil because of the comparatively low heat value in the bagassee which would cause the cycle of operation to become too lengthy.

Oil has proved to be particularly adaptable for use in lime kilns owing to the fact that the product is more evenly heated as the required temperature can be attained and maintained within a few degrees variation.

Oil is an ideal fuel in the glass industry, also in the bending of glass, great care must be exercised in its heating—the method being to charge the glass plates into the furnace while it is cool, the sheet steel form being held under the glass. The furnace is then heated very slowly and the heat evenly distributed. When the plate has reached a certain temperature, it gradu-



Here is a view of the Union Oil Company's refinery at Wilmington, California, taken from the air. This is the first refinery built in the Los Angeles Harbor district. The main office building is at the bottom of the picture. It will be noted that the company has plenty of room to expand and also to build additional storage if it is needed.

ally bends to the form provided. Oil is an incomparable fuel for this work.

The copper industry has adopted fuel oil, for, in the refinement of copper, an entire batch may be spoiled by improper heat treatment. The method of refinement is to charge copper bars of 90 per cent purity into the furnace and to maintain a heat control such that oxidation of the impurities takes place, forming a slag. If this heating is carried on after the copper has reached proper refinement, oxidation starts to take place in the metal itself and, if allowed to continue for 15 to 20 minutes beyond this point, the product is rendered inferior, for, on drawing the metal into wire, minute openings form which ruin its conductivity for electrical purposes, and reduces the strength of the wire as well.

Fuel oil has been adopted for use in bakeries, as in the other industries, on account of its even distribution of heat throughout the oven, together with the accurate control which can be maintained. By simply turning the valve, the temperature of the oven may be raised or lowered within a very short time, thus obtaining the proper temperature in the shortest time before introducing the various kinds of pastries.

The quality of the oil used by the industries in general is that of a heavy gravity, namely, from 20-24 degrees, Baume, but to meet special requirements, additional specifications are requisite. Fuel oil being used in our northern states sometimes requires a lower cold test than that used in the South and this specification is often included on Northern purchases. The sulphur content of the oil plays an important part in many industries, particularly the steel industry where a low sulphur content is desired. Many other industries find it necessary to purchase a fuel of low sediment content while in some of the more specialized uses, fuel oil of a narrow viscosity range is requested. Although most of our fuel oil is thus used by the industries, the amount that could be used by them is considerably more than the above figure, and the oil industry, to increase the use of fuel oil in the industries, must study the individual needs or at least co-operate with them so that fuel oil specifications may be outlined, just as specialization has taken place in the specifications for gasoline and lubricating oils, and it is only through this treatment that we will be able to extend, in maximum proportions, the use of fuel oil here. A logical development would be the employment of a combustion engineer to study these problems just as the refineries have developed their lubricating oil sales through the lubricating engineer. In many instances coal, coke or gas have been replaced by fuel oil in the industries and in many cases without success simply because of a lack of knowledge, principally on the part of the user, as to the characteristics of the fuel oil and a lack of knowledge in obtaining a proper kind. Many of these difficulties could have been overcome if they had been brought to the attention of the oil industry. It should be our work now, however, to learn these difficulties and to supply the proper fuel to meet these individual needs.

A great field is thus awaiting the oil industry, but only through persistent, specialized work will the story of fuel oil reach these people. Why we have so specialized in the disposition of lubricating oils which represent but 4.5 per cent of the crude and have practically ignored the furthering of the development of fuel oil which represents 48.5 per cent of the crude oil appears most illogical.

### Heating

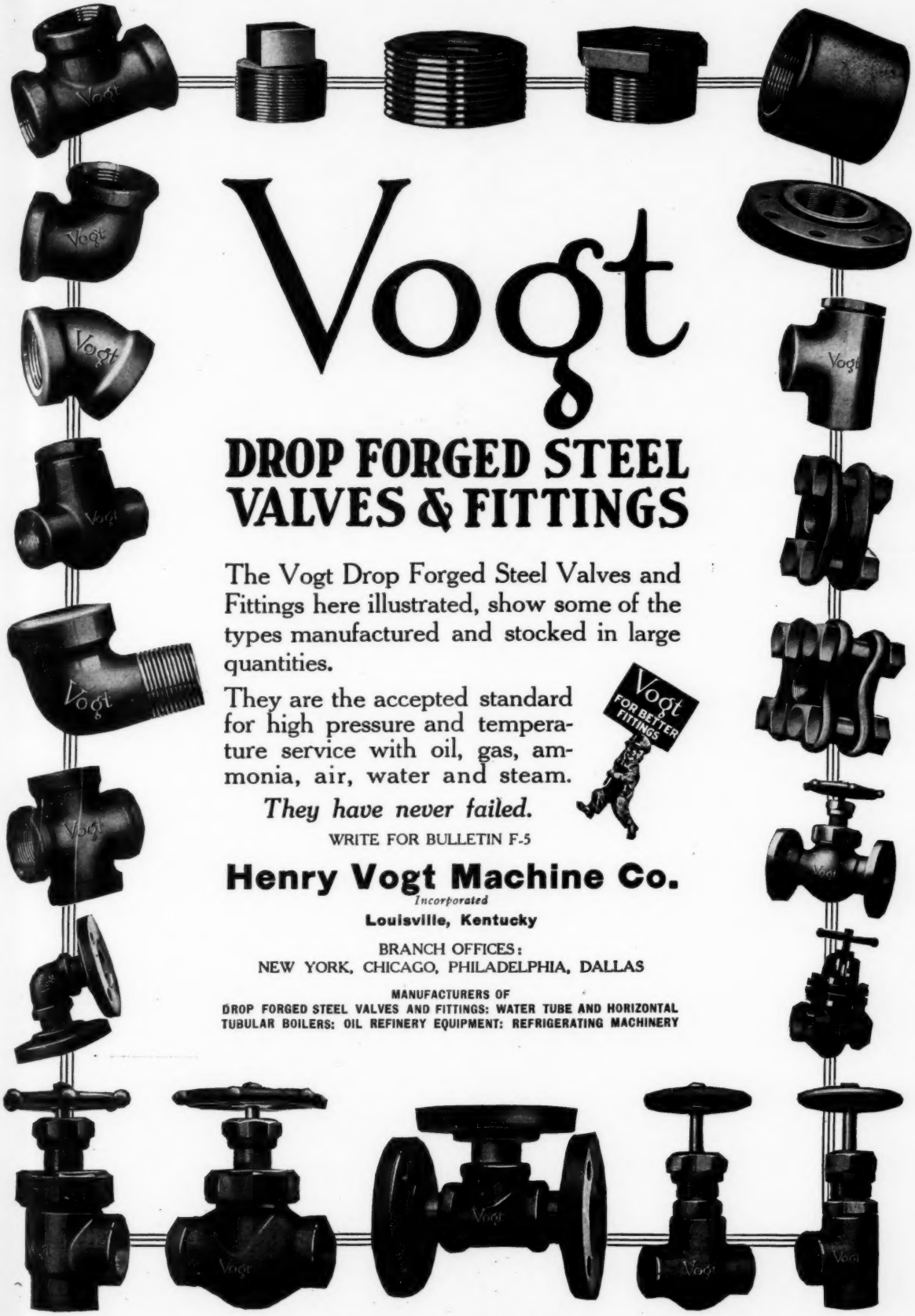
Another field that awaits intensive development is building and household heating. The possibilities here have been barely scratched as indicated by the small amount of fuel oil and gas oil consumed in this manner. No accurate figures were obtainable but to gain an idea of the amount thus consconsumed, the seasonal difference in the monthly Bureau of Mines statistics for the last three years were averaged and it was found that only 2200 barrels of fuel oil and gas oil were used daily during the cold half of the year over the average consumption during the warm half. A like comparison was made for 1923 and the consumption during the colder months of that year was 6200 barrels per day more than the warmer half of the year. Thus, the use of fuel oil was increased during 1923, and this increase was probably due to the persistent advertising by the burner manufacturers rather than to the oil industry. It is interesting to note the following article appearing in the Washington News for January 30:

"The uses of oil burning heating plants to replace the present coal burners is being considered at the office of the superintendent of State, War and Navy buildings for use in government buildings under this department. The state department maintains about 60 per cent of the government office buildings in the district. Bids will be opened Friday for the installation of oil burning equipment in the land office, patent office and courthouse building. It is thought that the saving will pay for the plant within a year. A temporary oil burning plant for heating buildings in the vicinity of the Navy and Munitions buildings will be erected this summer. A shipping board tanker in which 40,000 barrels of oil can be stored, will be towed up the Washington channel to be used as a storehouse."

Little credit is probably due the oil industry for this spirit but we should not sit by, however, and it is the intention here to point out the probable developments in refinery practices which will affect the kind and amount of fuel oil which is and will be available for this use.

In most cases of building heating in which oil was used, the installation is designed to burn heavy fuel oil much like that used by the industries. Adopting this quality of oil for heating purposes appears most logical and suffice to say that certainly an expansion in this use is warranted and a supply of heavy fuel oil is guaranteed.

On the other hand, considerable developments have taken place in the design of household burners using distillates of from 34-42 gravity. Such burners certainly have their advantages and it is seen that many manufacturers of burners designed to burn heavy fuel oil on a small scale, have discontinued making this class of equipment as they feel that it is too expensive for the ordinary owner to install. Also, a disadvantage is pointed out that heavy fuel oil is not always obtainable in all parts of the country while lighter distillates may be readily obtained at any point. Likewise, the ordinary man knows little or nothing about the mechanics of an installation suitable for burning heavy fuel oil, and, therefore, experiences considerable trouble with the burner. Light distillate burners seem to simplify things in this regard. Thus, the household burner designed for distillates has temporarily proved more popular, but regardless of these advantages, the use of this kind of equipment will be limited to the amount of distil-



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Pan American refinery and tank farm near Los Angeles harbor.
—Photo by Cross, Los Angeles, taken from air.

lates that will be economically available and this amount will necessarily be small.

The refiner, in turn, has been recently called upon to supply this increased demand for a suitable oil cheaply but along with this demand, have come developments in fractionation which are practically eliminating this cheap source.

It has been said that the gas oil yield will be limited by the increased use of cracking and, likewise, the yield of distillates will be limited by increased fractionating efficiency and cracking. These oils will always be available, however, but not at a price to favorably compete with heavier oils for a general adoption by household users, and only in preferred instances where the advantages of burning these light distillates overcome their increased cost will they be used.

With the increased use of kerosene as a source of power, particularly in tractor use, the decreasing market for this material will be largely stabilized. Thus, with an assured future market for kerosene and gas oil, the amount of 38-40 distillate, or the intermediate cut, will be reduced or the price held on an equivalent basis, as this cut could be easily eliminated to make 45 per cent kerosene and 55 per cent gas oil.

Taking the average Mid-Continent crude as a basis, a yield of 6 per cent 38-40 distillate may be made without seriously reducing the amount of kerosene and gas oil on the market. A realization based on today's prices will show a gross return of $2.40 to apply against the cost of crude, operating expenses and overhead. Should this cut be eliminated, to make kerosene and gas oil the same return is shown for the refiner and it is readily seen that on the present day price structure, except for gallonage, there is no advantage to the refiner in making 38-40 distillate.

With increased price of gasoline, it is evident that a maximum yield of gas oil will be desired as a cracking stock and with increased fractionating efficiency, the volume of kerosene will be reduced and the price of 38-40 distillate will necessarily be raised. A 6 per cent yield of this product is taken as a maximum as a higher yield would materially reduce the amount of kerosene and gas oil which may be produced. An actual yield of 25 per cent of the crude oil could be made into suitable burning distillate but it is readily seen that should this amount be produced, the kerosene yield would be reduced to practically nothing and the gas oil yield so reduced that an inadequate supply of a suitable cracking stock would result. With a 6 per cent yield, or what may be termed the economic maximum, a million and a half homes could be supplied. Thus, it is seen that this quality of oil could not be universally adopted, although it could be supplied to a great many homes.

Thus, burners designed to use the lighter distillates are dependent on a limited supply and, also, there appears to be a tendency for this material to demand a higher price. In addition to the cost of the raw oil, certain burner manufacturers are recommending a treated, odorless, water white oil, which in turn, adds to the price, as additional processing is needed at the refinery. Such an oil is virtually a low gravity kerosene. However, the price does not reflect the theoretical value of the oil, and for comparison, the following table is a most striking argument for the adoption of a heavy oil for heating.

Kerosene contains 136,000 B. T. U.'s per gallon and costs 5½c on today's market.

38-40 Distillate contains 137,500 B. T. U.'s per gal. and costs 4½c.

Gas oil contains 141,000 B. T. U.'s per gal. and costs 3¼c., while 22 gravity fuel oil contains 147,000 B. T. U.'s per gal. and costs 2¼c on today's market.

It remains that development in burner designs must be made to utilize the heavier fuel oils, to be of simple construction so that the average man may become familiar with their operation, and cheap enough for the ordinary home owner to install.

To complete the accounting for the consumption of fuel oil, it will be remembered that a net of 62,000 barrels of fuel oil was exported, daily, in excess of imports. This figure was likewise taken from the Bureau of Mines statistics. Our greatest customer is the United Kingdom which takes approximately one-third of the total amount and which, together with Canada and England's other possessions, purchases approximately one-half of the total. This great amount of export business should further indicate to the hesitant fuel oil user that other countries, even after paying the additional cost of transportation, are using our oils to advantage; also, there is a surplus of fuel awaiting home consumption. In addition to this amount exported, fuel oil and gas oil stocks increased at the rate of 15,000 barrels per day during the last year, emphasizing again that the supply is greater than the consumption and that there need be no fear of a fuel shortage.

In the ideas I have tried to convey, an effort has been made to merely cite facts or tendencies. It certainly seems most convincing, that the oil industry must develop a market for fuel oil, which represents 49 per cent of the crude oil yield, and to establish that market on a firm basis by going out and studying the problems in conjunction with the use of fuel just as it has in preparing specialized markets for the sale of gasoline and lubricating oils; also, that the yields of fuel distillates are economically limited and that the disadvantages in price together with the lower heating value per gallon, show that the logical development in household heating will be the perfection of a suitable burner using a heavier oil, an ample supply of the latter being guaranteed.

---

**Desdemona, Texas**—The World Gasoline Company, which has a two unit absorption plant on the N. O. Beardon lease, J. Salinas survey, near Desdemona, has incorporated with a capital stock of $50,000. J. P. Benkendorfer of San Antonio is president of the company, while other officers are Hugh McLellan and F. M. Benkendorfer. The Company's address is P. O. Box No. 946, Desdemona.

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**Tulsa, Okla.**—The Liquified Petroleum and Gasoline Company has started construction on a four-unit absorption plant in the Stroud, Oklahoma, field.

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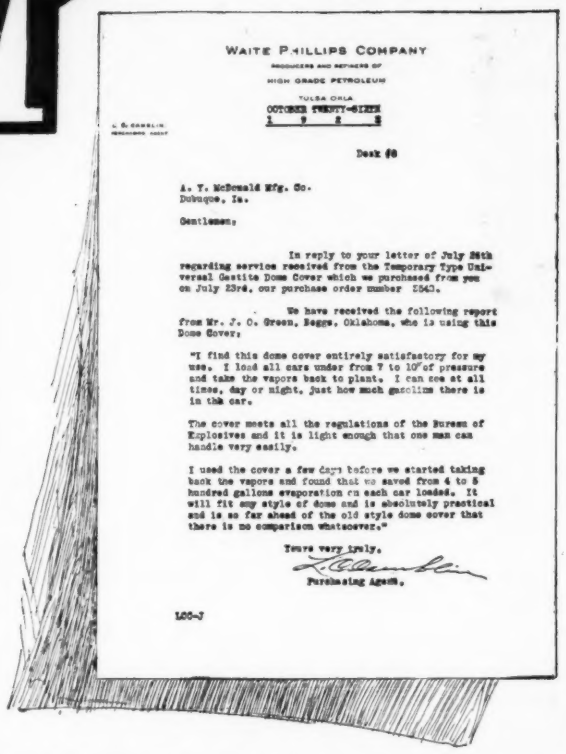
**Erie, Pa.**—Henry Palmer Wescott, a national authority on natural gas measurements, inventor and manufacturer, died at his home here February 27. He was 45 years old, a native of Seneca Falls, New York, where the factory of the Wescott Valve Company is located, and was well known throughout all sections of the country where the oil and gas industry has been developed.

# McDONALD



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In reply to your letter of July 26th regarding service received from the Temporary Type Universal Gastite Dome Cover which we purchased from you on July 23rd, our purchase order number 2543.

We have received the following report from Mr. J. O. Green, Beggs, Oklahoma, who is using this Dome Cover:

"I find this dome cover entirely satisfactory for my use. I load all cars under from 7 to 10 of pressure and take the vapors back to plant. I can see at all times, day or night, just how much gasoline there is in the car.

The cover meets all the regulations of the Bureau of Explosives and it is light enough that one man can handle very easily.

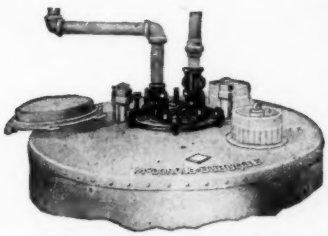
I used the cover a few days before we started taking back the vapors and found that we saved from 4 to 5 hundred gallons evaporation on each car loaded. It will fit any style of dome and is absolutely practical and is so far ahead of the old style dome cover that there is no comparison whatsoever."

Yours very truly,

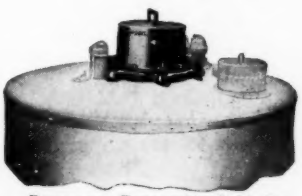
Purchasing Agent.

LGG-J

**Approved by Tank Car Committee Amer. Ry. Assoc.**



Universal Gastite Dome Cover
Temporary Type



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### Optimism Prevailing Note at Dallas Meet

(Continued from page 10)

greater efficiency in their plants and to improve the service and quality of the products sold to the public, added Mr. James. The public has a misconception of the profits derived from a barrel of crude by a refiner, and are prone to judge the whole industry by a few outstanding successes accomplished.

Discussing the outlook for export markets in 1924, Leland V. Stanford, of New York, manager of the foreign sales division of the Sinclair Refining Company, stated that there was just cause to believe that the American petroleum exporters would continue to do a large volume of business, unless our prices should reach the point where, when import duties and taxes are added and should foreign exchange fall to such a low level, the cost becomes so high as to actually be beyond the reach of the ultimate consumer. "In reviewing the future, it is well to review briefly what the total volume of our petroleum exports has amounted to during the past two years. Government figures on gasoline exported from this country in 1923 indicates a gain of approximately 46 per cent, as compared with the totals for the year previous, while kerosene and lubricating oils, all grades, gained only slightly more than 5 per cent. A gain of approximately 76¼ per cent was shown in 1923 on gas and fuel oil, as compared with 1922 totals. The fact that low priced markets prevailed in the United States during the past year, undoubtedly, had its effect on the increased consumption abroad."

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A new process for the manufacture of so-called "Stabilized Gasoline" being developed by the Tidal Refining Company was explained by L. F. Bayer of the Tulsa offices of the company, and the advantages that it will offer to the refiners in reducing outages while in transit. A paper giving full details about "Stabilized Gasoline" will be published in an early issue.

The report of the committee appointed on the opening day of the convention to nominate officers and directors for the ensuing year was submitted and unanimously approved by the members at the executive session held on the final day of the convention. A constitutional amendment authorizing the board of directors to fix the amount of dues of members was also voted.

The financial report on the association was read by R. R. Irwin, and the finance committee submitted recommendations that the budget be reduced during the ensuing year. The newly directed officers and directors went into conference immediately after adjournment of the executive session, and elected the following to serve on the executive committee: H. T. Ashton, D. E. Buchanan, Samuel C. Collins, George N. Moore, R. R. Irwin, E. R. Perry and W. M. Welch. The necessity of having the executive committeemen within easy reach of one another for frequent meetings was taken into consideration in their selection. The newly appointed executive committee went on record as being in favor of making an effort to show the general public the true facts on the refining industry, and plans are to be formulated at a future meeting.

Howard Bennette, who was appointed secretary of the association last September, was re-elected by the executive committee for the ensuing year, but is to have his title changed to managing director in keeping with the wider scope of authority and activities invested upon him by the new committee. Eleven new members were reported to have been obtained at the meeting.

George D. Locke, vice president of the Barnsdall Refining Company, Chicago, presided as toastmaster at the banquet given Thursday evening as the final event at the Dallas convention, and speeches were made by Hon. William H. Atwell, Judge of the United States District Court, Dallas, and Edward James Cattell, Philadelphia. Fayette B. Dow presented to George N. Moore, retiring president, a bound volume of letters, which were written by each member of the association as a mark of appreciation of the untiring services rendered during his two terms of office. The retiring president and his wife were also presented with a silver service on behalf of the members of the association. Brief remarks of appreciation were expressed by Mr. and Mrs. Moore.

W. G. Lackey was awarded the champion's silver loving cup for having the best score in the golf tournament held during the convention, and W. E. Moody, Shaffer Oil and Refining Company, Cushing, Okla., pulled down the second prize with a score of 97. The "booby prize" cup was presented to H. T. Ashton. Judge J. A. Germany of Dallas awarded the cups in behalf of the oil men of Dallas.

Resolutions were passed in appreci-

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ation of the hospitality and entertainment provided the visiting members and guests during their stay in Dallas. The entertainment committee consisted of the following: W. B. Hamilton, Texhoma Oil and Refining Company, Wichita Falls; Elliott Jones, Elliott Jones and Co., Inc., San Antonio; Harry Hassan, Jr., Sinclair Refining Company, Dallas; R. T. Musser, General American Tank Car Corporation, Dallas; C. W. Cahoon, Carson Petroleum Company, Dallas; R. D. Walker, Pure Oil Company, Dallas; E. P. Angus, Magnolia Petroleum Company, Dallas; Judge J. A. Germany, Dallas; Frank Cullinan, Republic Production Company, Dallas; R. S. Haseltine, Guiberson Corporation, Dallas; W. H. Frances, Magnolia Petroleum Company, Dallas; C. H. Seabrook, American Paint and Supply Company, Dallas; J. P. Laney, Mid-Continent Oil and Gas Association, Dallas, and George Bird, Dallas.

# Department Figures Show That Gasoline Reached New High Output During 1923

GASOLINE production in the United States attained a new high record in 1923, when 7,555,945,143 gallons were produced, states the Department of the Interior, through the Bureau of Mines. The figures represent an increase of 21.83 per cent over the 1922 gasoline output.

While a record breaking production of gasoline was being registered, the demand for the product attained an even greater percentage of increase. For the year 1923 the indicated domestic demand amounted to 6,685,035,280 gallons. Exports were 871,116,614 gallons, which added to domestic demand shows a total demand for the year amounting to 7,556,151,894 gallons, an increase of 26.64 per cent over the total demand in 1922.

Gasoline stocks on hand January 1, 1924, were 1,074,899,650 gallons, an increase during the year of 191,106,789 gallons or 21.62 per cent. This increase in gasoline stocks compares favorably from the refiners point of view with the increase of 50.8 per cent in stocks during 1922.

Imports of gasoline in 1923 were 191,313,540 gallons an increase of 207.91 per cent over the preceding year. The total new supply (production plus imports) in 1923 was 7,747,258,683 gallons, or 23.67 per cent over the 1922 new supply. For the entire year the new supply exceeded the total demand by 2.53 per cent.

The output of gasoline in December constituted a new monthly record, amounting to 659,168,606 gallons, which was 108,000 gallons above the previous records in October. A total of 246 refineries reported to the Bureau of Mines as operating during December with an aggregate daily crude oil capacity of 2,158,072 barrels. These plants operated at 76.61 per cent of their aggregate capacity.

Kerosene production in 1923 was 2,348,934,712 gallons, an increase of 1.85 per cent over 1922 output. Imports during the year were 301,483 gallons, which added to production, shows a total new supply of 2,349,236,195 gallons. The indicated domestic demand for kerosene during the year was 1,492,535,909 gallons, an increase of 1.96 per cent over the preceding year. Exports in 1923 were 854,554,951 gallons, about 48,000,000 gallons less than in 1922. The total demand (domestic demand plus exports) was 2,347,090,860 gallons, a decrease of 0.82 per cent from the 1922 figures. Stocks were increased only about 2,000,000 gallons during the year, the amount on hand January 1, 1924, being 283,195,667 gallons.

The production of gas and fuel oils in 1923 was reported to the Bureau of Mines as 12,074,191,693 gallons, an increase over the preceding year of 12.78 per cent. Imports were 516,022,937 gallons. The total new supply amounted to 12,590,214,630 gallons, an increase of 16.25 per cent over the preceding year. Domestic demand amounted to 10,978,285,596 gallons and exports were 1,401,622,173 gallons, making a total demand of 12,379,907,769 gallons, an increase of 14.03 per cent over 1922 figures. Stocks were increased a little over 200,000,000 gallons during the year, amounting at the end of 1923 to 1,515,034,711 gallons.

The 1923 output of lubricants was 1,097,368,222 gallons, an increase of 12.12 per cent over 1922 production. Imports during the year were 1,219,133 gallons.


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# California Tendency Toward Better Yields

## Economic conditions hasten development of processes and methods for low cost production

*By Carl J. von Bibra*
*Chemical Engineer*

DESPITE the fact that the prices of refined products have risen substantially in the past two months, the situation which confronts the California refining companies at the present time is thoroughly unsatisfactory. These companies may be divided into two classes, the big refiners and the smaller ones. Both of them have plenty of troubles, but the troubles differ somewhat both in kind and in intensity. California has a rated refining capacity of 520,000 barrels of crude per day. Of this, approximately 350,000 barrels, or two-thirds of the total, consists of large refineries, i. e., plants with a normal capacity of 20,000 barrels per day or more. The whole 350,000 barrels is distributed among nine plants. The remaining 170,000 barrels is put through about 80 little refineries. This will serve to give some idea of the relative importance of the two classes of refiners and will also permit a better understanding of their present difficulties.

### Case of the Big Refiners

During the recent period of overproduction in California the large refiners, who were also the big pipe line operators, found themselves swamped with raw material. The result was that crude prices broke to a point at which California oil could be brought into the European and American Atlantic Coast Markets in competition with Mid-Continent and Gulf Coast production. This raised havoc with the oil industry in the Mississippi Valley. This fact is only too well known throughout the country. What is less thoroughly understood is that the very California companies which shipped the oil suffered practically as severely as did those whose trade they took away. This may appear an impossible and crazy state of affairs, but the key to the matter is to be found in the prices at which California had to sell its oil. What happened was that the Pacific Coast market for crude, fuel and refined oils became so soft and depressed that none of the operating companies made any money in their normal marketing territory because of the extremely severe competition, and on top of that made barely enough to pay overhead on the shipments into the eastern territory and Europe.

Enormous capital expenditures were made for pipe lines, tankage, terminal loading stations, tankers and additional refining capacity. Much of this physical equipment which had to be added to the California oil industry to take care of the peak load will never be used again at anything approaching maximum capacity, because when new fields are discovered they will in all probability be located so that new lines, reservoirs, etc., will have to be built in different locations. Leaving the question of new fields and future requirements out of consideration entirely, it is a fact that despite the most careful estimating and conservative construction the big California oil companies built a vast amount of storage capacity in the form of concrete reservoirs and steel tankage which remained empty after the peak passed late last summer. Construction of this kind costs from 25 cents to 50 cents per barrel. Probably somewhere in the neighborhood of 15,000,000 barrels of unused and now useless storage space was provided. Therefore, we have here a financial burden which will have to be borne by the crude and tops which actually were stored. It is of course evident that such a burden as this would not normally be a heavy one for an industry of the magnitude of the California petroleum industry. The point is, however, that five or six million dollars deducted from a margin of profit already at the vanishing point certainly does not help to make matters more cheerful.

**California refiners are looking toward increased operating efficiency and improved technique for relief from the situation which now confronts the industry as a result of the past months of excess crude supply.**

**The accompanying article is the first of a series on what the West Coast refiner is up against and how he is going to meet it. The second article which will appear in the April issue will deal with the distillation of petroleum in tubular furnaces as developed in California.—The Editor.**

The big outstanding result of the exportation of crude, fuel, gasoline, tops and engine distillate from California during the past year has been that the local market became so depressed that even now, with the eastern and European shipments gradually diminishing, Pacific Coast prices are still too low to show a reasonable refining profit. It is always much easier to lower prices than to raise them, and so the outlook for the immediate future of the large California operators is not any too rosy. This unencouraging prospect is strongly emphasized by the fact that there is sufficient gasoline (both finished product and readily convertible "tops") in storage at the present time to supply the normal Pacific Coast market for a full year. As there is no apparent likelihood of a substantial slow-down of refinery operations for a long time to come, this large reserve of gasoline will probably hang over the market for a year or two as a depressing influence.

### Effect on Refining Costs

The net result of the market situation which has just been outlined is that the California refining plants must operate on a very low cost basis or close down. The old days of rule-of-thumb oil refining have passed into history. During the past few years many new forms of apparatus have been developed for the ordinary refining processes such as straight-run distillation and sulfuric acid treatment. In addition, a number of radically new processes have been adopted. The obvious result is that an up-to-date California oil refinery looks so different from the plants built 15 years ago that the layman might easily assume the two to be manufacturing units in entirely different industries. The less evident but highly important result of this development is that the modern refineries can operate at unit costs which would have appeared ridiculous a few years ago.

There are a number of plants on the Coast which are topping from 30 to 45 per cent from the present low-priced crude and making gasoline, engine distillate, kerosene, a number of heavy distillates, and fuel residuum at a cost (including operation, maintenance and fixed charges) varying from eight to 12 cents per barrel of crude put through. This has been accomplished by a combination of large scale operations and highly developed technical processes. The present market condition of the industry has accentuated both of these factors.

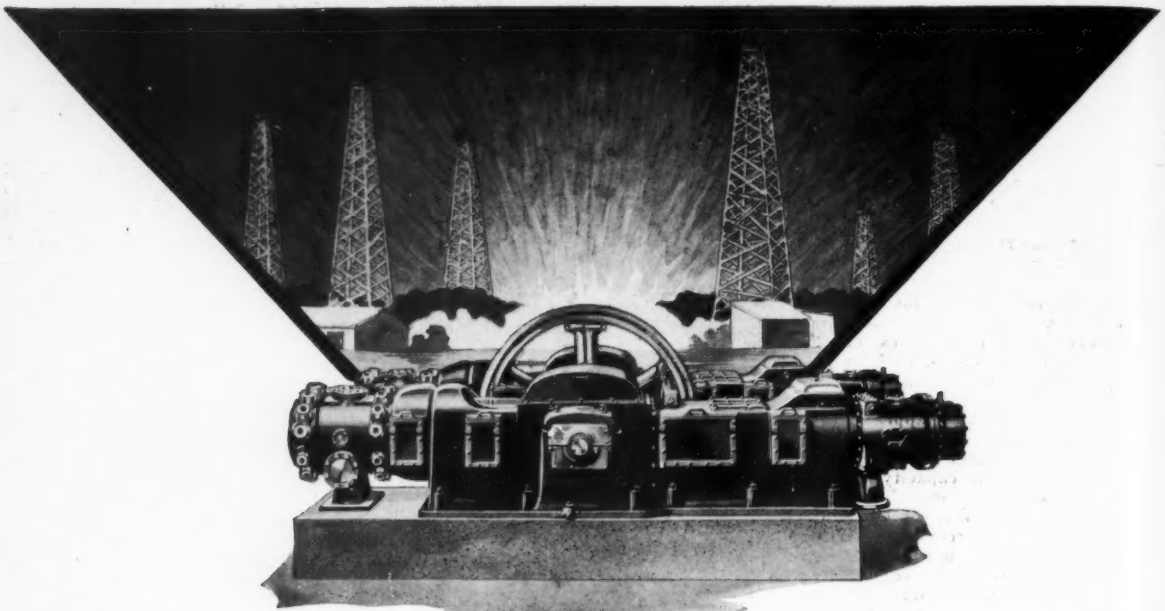
The larger California refineries are, with few exceptions, running from 50 percent to 100 per cent more oil now than they did two years ago. Also, all the old established companies have been wide awake to the necessity of improving their processes. The lines along which these important improvements have been and are being made will be discussed in future articles in this series.

### Smaller Refiners

If the big refiners are having a hard time of it the smaller companies are having a much worse one. There are only a few of them who have any assured supply of crude, and even these few must generally pay a premium to get it. Most of the smaller plants are buying their raw material from one or two sources on short term contracts. If one well, or a small group of wells, goes to water or stops flowing altogether, the plant has to shut down. In the neighborhood of Los Angeles there are about ten small refineries which have been in existence for periods ranging from five to 20 years. These plants have operated on crude during the various times of flush production and then, when their crude supply has given out, have either shut down or run on a limited supply of rather high priced tops sold them by the big companies. On this material they could generally eke out a meager existence but naturally couldn't make any real money. Naturally, if there were any large profits in it the bigger companies would handle the material exclusively themselves, rather than to sell it to small competitors.

In addition to these small refineries

(Continued on page 28)



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which were built some time ago there have been constructed during the past two boom years some 15 little plants in the Los Angeles basin alone. With regrettably few exceptions these were public promotions built without regard to permanence of crude supply or market outlets. Most of these plants are either of an antiquated design or else they embody some crazy notions held by the promoters or by would be inventors who talked the technically ignorant promoters into buying the ideas for a nice round sum or leasing the supposed world-beating processes for a fat royalty.

These small refineries are now in a bad way. Last summer when the pipe line companies couldn't handle all the oil produced there was plenty of crude available. Of course prices for refined products were at bottom too, and the smaller plants, with five exceptions, had to haul their crude from the fields in tank cars or trucks. Now, however, conditions have changed. Refined prices have stiffened considerably but the crude supply has gone down. In some instances it has entirely disappeared with the drastic decline in production at Santa Fe Springs and Huntington Beach and the somewhat less perpendicular decline of the Long Beach field. Two plants which were completed within the past few months have never had a barrel of oil to refine. So far as can be judged now they have absolutely no value except for salvage as other more permanently established plants can use additional tankage, stills or pumps.

### Low Priced Natural Gasoline

During the past year or so a number of the smaller refiners were able to make money by undercutting the big companies. They were able to do this because of the condition of the natural gasoline market.

Operating on a very large scale and with high grade refining crude at ridiculously low prices the bigger companies were able recently to manufacture United States government specification straight run gasoline at a cost of from six to eight cents per gallon. Very few were able to reach the lower figure. Eight cents per gallon came pretty close to representing the manufacturing cost of most of the substantial refiners. The service station price, after deducting the two cent state tax, was 13 cents per gallon. As it costs just about five cents a gallon to deliver gasoline from a centrally located refinery to service stations located in the same city and sell the material, it is evident that there was no money to be made in straight run gasoline. Still, as previously mentioned, a number of the smaller companies were able to make money during recent months on their refining operations. They did this by topping their straight run from the crude. Then they cut an engine distillate with a high initial and an end point below 437° F. With this they blended absorption gasoline, water white in color, 70°-76° gravity, and having an end point varying from 300° to 400°F. Natural gasoline meeting these specifications was obtainable in Southern California at from five to six cents per gallon for many months. If we assume a cost of seven cents delivered at the refinery and after all loss, it can readily be

STABILIZED GASOLINE

After many months of investigation and experiment, we have adopted, in the manufacture of natural gasoline at our Burkburnett plants, a process which stabilizes the product and thus increases its value to refiners. Stabilized natural gasoline is different from the usual grades of natural gasoline in that its distillation recovery is much higher and its vapor tension much lower. In recent tests in which 80% of 53 gravity naphtha, 98.5% recovery, was blended with 20% of stabilized natural gasoline, we secured a product which has a recovery of 97.5%, meets all Navy specifications, and makes in every respect a motor fuel of high quality. We are now able to offer this stabilized product.

*Wire or Write*

TIDAL REFINING COMPANY
TIDAL BUILDING—TULSA, OKLAHOMA

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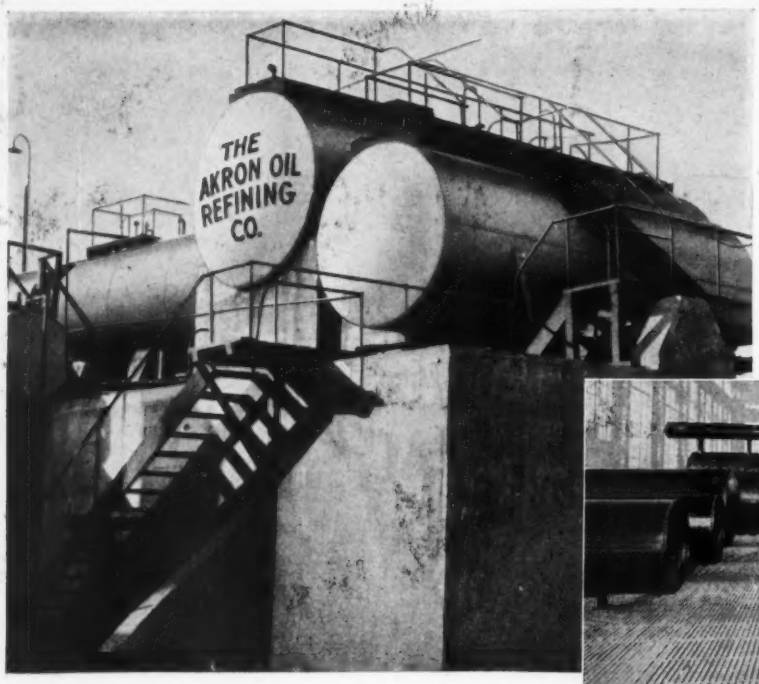
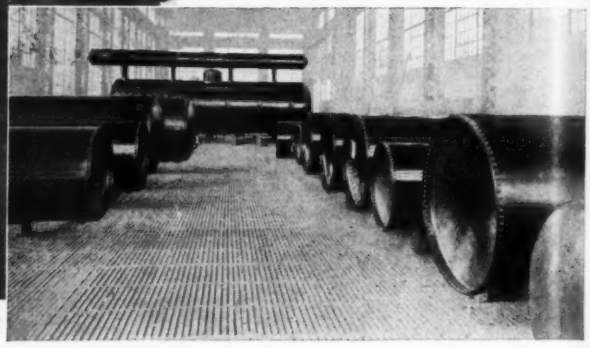
Makers of Veedol Quality Lubricants and Tydol Economy Gasolene



The Akron Oil Refining Co. uses Biggs Tanks of all sizes and dimensions from 500 to 12,000 gallons capacity.

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Fractionating Towers or Columns
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Steam Stills
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# BIGGS

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STANDARD OIL COMPANY
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WHATEVER you need in riveted steel plate equipment, we are all set to rush it through for you in quick-step time.

Any shape, any size, any pressure, any thickness up to 1 1-2 inch plate can be easily handled by our up-to-the-minute machinery and well trained organization.

Our 36 years of specialization in steel plate construction assures you of the enduring character of Biggs workmanship.

Let Biggs work with you to make your steel plate equipment pay real dividends for years to come.

**THE BIGGS BOILER WORKS COMPANY**
**AKRON, 42, OHIO**

# TANKS

seen that a 50-50 blend of such natural gasoline with a distillate worth about four cents per gallon would produce a perfectly good gasoline costing the small refiner not more than five cents per gallon, or one cent less than the cost for which the most efficient large scale operator could produce straight run gasoline. In this way the small refiner was able to produce at a lower cost than the big fellow by taking advantage of a broken natural gasoline market. Obviously the big refiners couldn't very well do likewise because there wasn't enough natural gasoline available to materially affect their large gasoline output.

Incidentally, the natural gasoline market in California was broken last fall by the completion of a large number of absorption plants in the three big flush fields. Very few of these little absorption companies had market outlets for their product. The result was that they were all competing against one another. The small refiners, too, took full advantage of the situation and played one absorption gasoline producer against the other until the market was absolutely demoralized. An attempt was made to organize these unlucky gasoline manufacturers into a protective association, but before this could be accomplished the situation began to right itself because of two things. First, several of the large oil companies entered the natural gasoline market on a big scale and bought all production which wasn't already contracted, at prices varying from five to five and three-quarters cents per gallon. This removed the entire surplus. The next thing that happened was that the gas head declined at Huntington Beach and Santa Fe Springs at an astounding rate. Long Beach has held quite steadily so far, but is on the verge of a decline. However, the drop in gas production in the first mentioned two fields was sufficient to greatly curtail the output of natural gasoline; so much so, in fact, that at the present writing the product is becoming distinctly scarce and prices are on the way up. It is not clear what the small and newly established refineries will be able to do under the new conditions. From now until the next period of overproduction the market will be strictly against them, except in the manufacture of special cuts, which the larger companies cannot afford to make because of disruption of their operating routine.

### California Refined Products

Five years ago the California refiners, like those in other parts of the country, were becoming very much interested in cracking operations. The gasoline market was strong and getting better all the time. Crude production was just about holding its own and toward the end of 1919 sagged off considerably. The demand for petroleum products was growing rapidly. This was particularly true of the lighter products, gasoline and engine distillate. In the summer of 1921 there was an acute shortage of gasoline and the product had to be prorated to the consumers. The retail price rose to 27 cents per gallon in the big disributing centers and higher in the smaller communities. By this time several of the big companies had cracking processes in full commercial operation and several smaller companies were turning out synthetic products also. Some of this gasoline was of fair quality, but much of it smelled to high heaven and would find no market at all at the present time. As far as cracking was concerned the period from 1917 to 1920 was an era of hopeful experimentation and more or less doubtful success in California. In the fall of 1920 crude production began to increase fast. There was a serious interruption in the fall of 1921, caused by a prolonged strike of field workers in the San Joaquin valley fields. Daily production dropped from 338,000 barrels to 228,000 barrels within a few months. From this figure it rose rapidly and didn't stop until a daily production of 870,000 barrels was reached in August, 1923.

It has already been pointed out that the price of gasoline dropped to 13 cents per gallon (without tax). On its way down from 27½ cents it made unprofitable one after another of the cracking plants which were in operation until they all were finally shut down.

At the present time interest in cracking operations is reviving. So far as the writer knows no commercial operations are being carried on. However, the local demand for gasoline is increasing at the rate of about 20 per cent per annum. The production of light crude is decreasing rapidly. There


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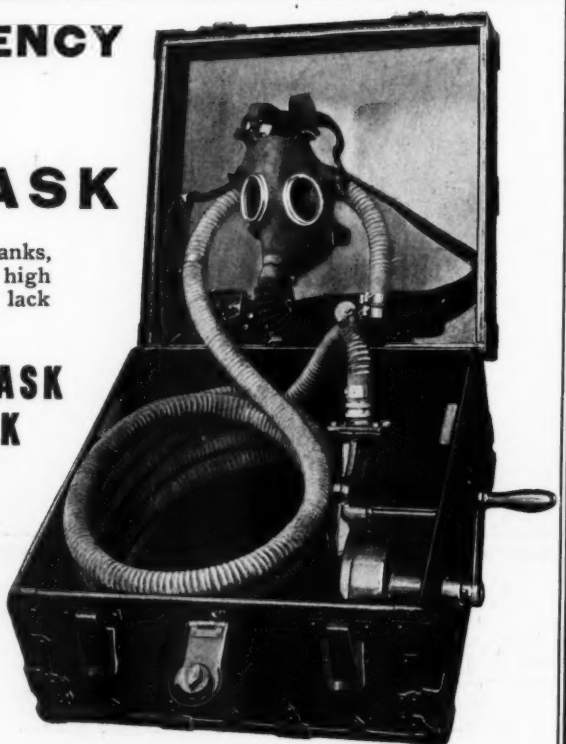

M-S-A Standard Hose Mask recommended by leading oil refiners throughout the country

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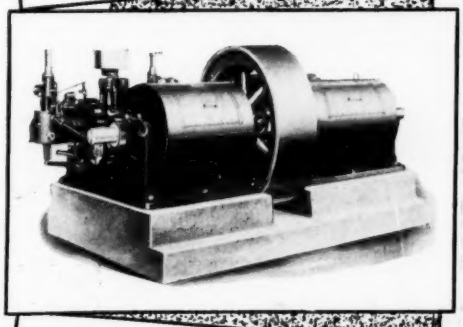
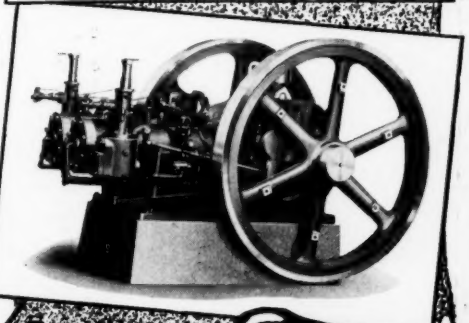
# Another Instance of Standardizing on "WESTERN" Engines





On May 17, 1923, we sold our first 40 H. P. "Western" Engine to a well-known oil company

—AND on July 10th, 1923, we sold them nine 160 H. P. and two 60 H. P. "Western" Engines.

—AND THEN on August 21st we sold them one 160 H. P. "Western" Engine.

—AND AGAIN on December 2nd we sold them two 160 H. P. "Western" Engines.

—AND FINALLY on January 10th we sold them three 160 H. P. and one 60 H. P. "Western" Engines.

A Total of 2620 H. P.—Name on request.

As we understand it these were **all** the gas engines purchased during that period of time by this company.

Previously they had used several other makes.

***A single Western engine has often changed the entire power policy of a large company.***

Demonstrations are convincing.

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EFFICIENT DEPENDABLE POWER

# WESTERN

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are large Eastern deliveries still to be made and so, despite the enormous surplus of gasoline in the state, the handwriting on the wall is plain enough. In 1926, or at latest 1927, cracking will be absolutely necessary. The only thing which could prevent this would be the bringing in of another enormous flush production. Such a flood as is just receding is not likely to come again immediately.

The reviving interest in cracking on the West Coast is due to the desire of the operators to be prepared for commercial operation when this is made possible by economic conditions. In the meantime much remains to be done. Those few companies which are still in the mood for developing their own processes find themselves threatened by the probability of patent litigation. The hopelessly tangled state of the American cracking patent situation is the greatest barrier confronting the development of this art. Most companies shy at it for this very reason. However, those California companies which have faith in their patents or in their unpatented processes will have to have time to test them in plant operation and possibly in court.

Two of the largest refiners have installed Dubbs units and others have this process under consideration. Several others of the established processes are also being investigated by various refining companies which have never cracked before or which have in the past operated other cracking processes which have not proved to be entirely satisfactory. The attitude of the Pacific Coast industry appears to be (1) to use extreme care before committing itself in favor of any particular cracking process; (2) to diligently seek the most efficient and generally satisfactory process, and (3) to have a trained personnel and some real plant experience in the process finally adopted before it becomes necessary to crack for market requirements.

Cracking, however, is not the only refinery operation which was affected by the rapidly changing petroleum market of the past few years. The manufacture of lubricants in California slumped just about the same time as cracking. It did not, of course, come to a standstill like cracking did, but the market became so depressed that the big plants greatly restricted their output, while the few small ones suspended operations. This does not refer to blending and compounding, but rather to the manufacture of blending stocks.

The result of the curtailed operations of the large lubricating plants, of which there are six in California, was that both time and equipment became available for large scale experimentation. When a plant has to run far in excess of its rated capacity it is impossible to think of breaking down a routine in order to try any new methods of distilling or treating. The California lubricating plants had been exceedingly busy from about 1916 to 1920. Since then there has been plenty of opportunity for the operating and research staffs to try out the many pet ideas which either had never been tried at all or at most were demonstrated in glassware or small experimental units. Many reports are now current of the results being obtained by various refiners. Some patents have recently appeared which show promise of radically new and highly profitable processes. Much of this new development has revolved around the application of highly adsorptive clays and earths in the purification and decolorizing of lubricating oils. Centrifugal processes have also commanded considerable attention and in one form or another have been adopted by several refiners. Centrifuges are now being used for such a wide variety of operations as (1) separating alkali wash water from lubricating oils treated in the usual manner, and (2) removing finely divided clay from filtered oils.

The use of adsorptive clays and earths has meant the development of an entirely new technique, and also the design of different apparatus for the proper execution of the new processes. It is entirely possible to use the adsorptive material in the commonly used forms of apparatus and obtain very satisfactory results. So much better results can be obtained, however, in especially built apparatus that several of the West Coast refineries have either remodeled their old equipment or constructed new plants for clay treating of their oils.

Some of the clays and earths employed in the treating of oils have little or no value in their natural state. Their adsorptive power, which is a direct measure of their value in refining, must be developed by acid treatment


"New Era" Absorber Trap

Is Not a Steam Trap

Designed expressly for Absorbers

Made in sizes to handle all the oil from Absorbers without the loss of any gas under any pressure and gravity and without any changes or adjustments.

These Traps do not become inoperative with oil and water.

An absolutely new creation.

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VALVE ENGINEERING COMPANY

66-72 Hamilton Street, Cambridge, Mass.

# Methods of Blending Natural Gasoline

## Motion of tank car makes sufficient blend after mixing, one refinery finds

*By H. R. Noble**

IT IS NEEDLESS to call attention to the rapid growth of the natural gasoline industry. It has more than kept pace with the growth of the straight run refineries and in the short space of a few years, has made its product a necessity of the greatest importance in the manufacture of commercial gasoline.

Natural gasoline is used by the straight run refineries for blending naphtha into commercial gasoline, the object being to lower the initial boiling poing or meet higher gravity specifications. Our experience has never proved practical blending for lower end point, the heavy ends always show up in a distillation test unless the percentage after blending is so small the lighter ends carry them over before the thermometer has reached the end point specification. The percentage of heavy ends above the end point specification must be two percent or less after blending in order to insure a safe end point on our commercial product.

Various methods of blending are in use at the different straight run refineries. After gauging a car of natural gasoline, the cap is replaced, connection is made with the bottom outlet of the natural gasoline car and, by use of compressed air, the natural gasoline is blown into eight or ten cars of naphtha at the same time. The natural gasoline line goes over the top through the manhole to the bottom of the tank car, on the bottom of which is a small T. We find that in blending this way there is a minimum amout of agitation in the fluid and very good results are obtained.

Immediately after blending a sample is procured and the tank car is sealed. The motion of the tank car traveling to destination, insures a uniform mixture throughout the car. We have never blended in any of our storage tanks, which would cause a second handling of the product, thereby increasing the evaporation losses.

I had the pleasure some time ago of inspecting a California refinery and their method of blending naphtha with natural gasoline was very much the same as a tret-o-lite plant. A 2 inch perforated pipe was placed within a 4 inch line, the natural gasoline flowing in through the 2 inch line and naphtha through the 4 inch line. I understood from the superintendent that this method was very satisfactory, but upon investigation I found their evaporation losses were higher than at our own plant.

It is the costom with some plants who own natural gasoline plants, at the field terminus of their pipe lines, to mix the natural gasoline with the crude and refine the mixture at their refineries. One local refinery has found this to be a very expensive way of handling natural gasoline, their refining losses for one month running as high as 7 percent. Whenever our refining loss exceeded 2 percent there is an immediate investigation.

As heretofore referred to, one of the problems confronting the entire industry is the evaporation losses, especially those interested in light crude and the light oil products. The following shows our experience in evaporation losses through the use of natural gasoline for the past several months.

| Month— | Natural Gasoline Used Gallons | Evaporation Loss Gallons | Percentage |
|---|---|---|---|
| January | 4,811 | 301 | 6.26 |
| February | 3,956 | 369 | 9.33 |
| March | 1,249 | 133 | 10.65 |
| April | 1,925 | 191 | 9.92 |
| May | 4,058 | 392 | 9.66 |
| June | 2,666 | 296 | 11.10 |
| July | 2,660 | 223 | 8.38 |
| August | 2,676 | 262 | 9.79 |
| September | 5,912 | 555 | 9.39 |
| October | 7,000 | 695 | 9.93 |

The percentage of natural gasoline used in blending depends entirely upon the crude that is being refined. Our Bull Bayou crude produces a naphtha which requires approximately 20 percent of natural gasoline to make a commercial gasoline, which will meet all new Navy specifications with the exception of intermediate points, while the naphtha produced from our El Dorado crude requires only 5 per cent of natural gasoline to meet new Navy specifications. The following is a copy of results obtained from the blending of Bull Bayou naphtha:

**NATURAL GASOLINE REPORT**

No. 1 10-11-23.
Car CNX No. 582
Gravity 87 Initial Boiling Point 70, End Point 343 8,074 gallons.

| Car No. | Naphtha Gravity | Specification I. B. P. | Specification E. P. | Gallons Naphtha | N.G. Gal. | —Final— Grav. | —Final— I.B.P. | —Final— E.P. |
|---|---|---|---|---|---|---|---|---|
| 410 | 52.5 | 234 | 449 | 6614 | 1460 | 58.8 | 122 | 437 |
| 491 | 52.5 | 234 | 440 | 6614 | 1460 | 58.5 | 114 | 440 |
| 505 | 52.5 | 234 | 440 | 6614 | 1460 | 58.9 | 116 | 438 |
| 361 | 53.7 | 200 | 437 | 6614 | 1460 | 59.5 | 112 | 434 |
| 360 | 53.7 | 200 | 437 | 6614 | 1460 | 59.0 | 116 | 440 |
| Total | | | | | 7300 | | | |
| Loss | | | | | 770 | | | |

You will note from the above report that in each instance a very satisfactory initial boiling point was obtained, the gravity was made 58-60, while end points fluctuated from 3 degrees below the original end point to 3 degrees higher and also shows that the naphtha of the same specification blended with the natural gasoline of the same specification in like proportions does not give the same results. The reason for this we have never been able to determine unless the light and heavy ends of the naphtha in the storage tanks have a tendency to separate into strata and do not become thoroughly mixed when pumping from the storage tank to tank car.

*Mr. Noble is vice president and general manager of the Shreveport Producing & Refining Corporation of Shreveport, Louisiana. The accompanying paper was prepared for the recent meeting of the Association of Natural Gasoline Manufacturers.

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and subsequent freeing from reaction products. This again requires special apparatus and carefully developed treating methods.

The treatment of adsorptive clays and earths and their use in oil refining as developed in the past few years will be discussed in detail in a later article.

It is impossible to consider any California petroleum product without being able to trace a distinct relationship between the recent changes in the oil market and the quality, quantity and methods of manufacture of the product. The boiling range of commercial gasoline has been greatly improved; the manufacture of asphalt has been increased and its production concentrated in the hands of a few refiners; the disposal of his fuel residuum is no longer the principal worry of the small refiner, etc., etc.

### Summing Up the Situation

The big California refiners have been suffering from cut-throat competition at ridiculously low prices. The large surplus oil stocks in the state make a steady recovery of prices highly improbable. Therefore a rather prolonged period of small profits is in sight, except for a few companies which built up very large stocks during the recent period of over production.

The present economic conditions have hastened the development of valuable new processes and forms of apparatus for the low-cost production of the desired petroleum products.

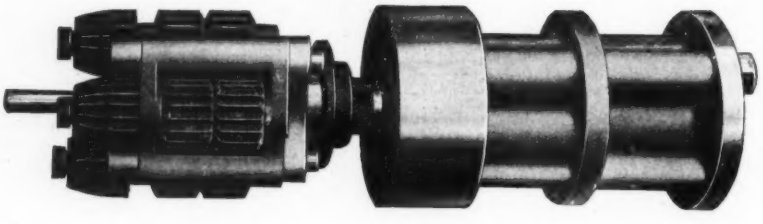
The tendency for the near future is toward gasoline cracking, the clay-treatment of lubricating oils, the increased production of Diesel fuel and the greatly increased use of fuel oil.

The small refiners will be pinched for lack of crude and will suffer because of the low prices obtainable for such products as they can make. While the prices which they can obtain for their refined products are now and will continue to be higher as far ahead as we can see, the differential between what the small plants have to pay for crude and what they can obtain for the products of that crude will probably remain small. Their chief source of relief will be in the production of special cuts and in the meeting of particular local trade requirements.

# *An Important Job–*

## The Removal of Carbon Deposits From Cracking Still Tubes

Important because upon it depends the life of the tubes and, to a large extent, the efficiency of the stills.



## Roto Tube Cleaners

will do the job THOROUGHLY, SAFELY and QUICKLY. ALL of the carbon deposit will be removed and the tube metal will not be cut into or damaged in any way. This is an assurance of long life to the tubes and restored efficiency to the stills.

**Write for further information and a copy of our latest, illustrated catalog.**

**The Roto Company**
HARTFORD, CONN.

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# PERSONNEL OF THE INDUSTRY

HARRY A. HASSAN, JR.,
Who leaves this month for Paris to represent the Sinclair Refining Company's Export Division

S. F. Smith, 32 years old, superintendent of the Rock Island Refining Company's plant at Duncan, Oklahoma, was killed March 4 by an explosion at the refinery.

W. L. Kistler of Denver, president of Producers and Refiners Corporation, was among those who attended the Dallas convention this month.

F. Godber, president of Roxana Petroleum Corporation, was away from his offices in St. Louis the first part of March on a business trip to Oklahoma and other points.

D. E. Buchanan of Tulsa, vice president of Chestnut & Smith Corporation and president of the Association of Natural Gasoline Manufacturers, was among those attending the Dallas convention this month.

John S. Cordell, sales manager of Empire Refineries with offices in Tulsa, has been appointed general manager of the Cities Service Refining Company of Massachusetts with headquarters in Boston.

Charles N. Haskell of New York, former governor of Oklahoma, has resigned as chairman of the board of Middle States Oil Corporation.

A. L. Derby, president of the Derby Oil and Refining Company, has returned to Wichita, Kansas, after a trip back east where he was called to Oil City, Pennsylvania.

H. N. Cole, vice president of the Pure Oil Company in the Southwest, has returned to the Mid-Continent refining territory after a trip to company headquarters at Columbus, Ohio.

O. J. Tuttle of Boston, sales manager for the Cities Service Refining Company of Massachusetts, has been appointed sales manager of Empire Refineries with headquarters in Tulsa.

E. H. Cornelius, president of the Industrial Construction Company, has returned to Tulsa after a trip through the North Texas refining and natural gasoline field.

J. D. Morris, 35 years old, engineer at the Hales & Cassidy gasoline plant at Cushing, Oklahoma, was killed February 23 by an explosion at the plant.

J. Bruce Orr of Pittsburgh, Pennsylvania, has been named president of the Standard Tank Car Company of Sharon, Pennsylvania, succeeding John Stevenson, Jr.

J. A. Vance, sales manager of the Kansas City Structural Steel Company of Kansas City, Kansas, was on a trip through Oklahoma and Texas refining fields the latter part of February.

Axtell J. Byles, formerly vice president and general counsel for the Tide Water Oil Company of New York, has been named president, succeeding George T. Slade, resigned.

C. M. Lamason of Tulsa has resigned as refining and sales manager of the International-Ardmore division of the Pure Oil Company.

Duncan A. Holmes of New York has resigned as a director of Pierce Oil Corporation.

O. D. Harger of the Tagliabue Manufacturing Company of Lynnbrook, Long Island, has been on a tour of the western refining territory, including the Mid-Continent field.

C. O. Stillman and other directors of Imperial Oil, Ltd., have been re-elected at the annual meeting recently held at Toronto, Canada.

Edward Prizer and other directors of Vacuum Oil Company have been re-elected at the annual meeting recently held in New York.

H. Y. Carson, research engineer for the American Cast Iron Pipe Company of Birmingham, Alabama, toured the Mid-Continent oil country in February.

J. R. Brooks, secretary of the Atlas Supply Company of Muskogee, Oklahoma, has returned from a trip through the Oklahoma fields.

G. F. Brigham of Tulsa of the North American Car Company was among those attending the Dallas convention this month.

A. V. Bourque of Tulsa, secretary of the Association of Natural Gasoline Manufacturers, was among those attending the Dallas refiners convention this month.

R. R. Rosier, sales manager of the Akin Gasoline Company of Tulsa, attended the Western Petroleum Refiners Association annual gathering in Dallas in March.

H. S. Fisher, formerly of the Division of Research, American Petroleum Institute, has joined the staff of the Knox Process Corporation, 136 Liberty Street, New York City, and will be closely associated with the development of this process for converting heavy hydrocarbons into gasoline and similar products. The first plant under this process is being erected at Texas City, Texas, and it is hoped to have it in operation early in the fall of this year.

Iva Rickerson, formerly of Tulsa, has been made superintendent of the natural gasoline manufacturing plant placed in operation by the Humble Oil and Refining Company early this year in the Corsicana-Powell field in East Central Texas.

E. C. Blasdell has resigned as superintendent of the Mutual Oil Company's refinery at Glenrock, Wyoming.

# Costly air castles

—the oil industry has been paying for them to the tune of $100,000,000.00 and more every year.

Mansions, skyscrapers, refineries—can be built with the saving effected by stopping evaporation. It is robbing you of 7½% of all the oil you handle. (see Bureau of Mines Bulletin 200). Your richest gasoline is in the 7½% that vanishes in the air. What's it worth? It's worth enough in a few months to pay for equipping your storage and work tanks with the Safvety Floating Deck.

It floats on the surface of the oil. No air space is left between deck and oil in which vapor can form. No vapor, no evaporation. The Kansas City Refining Co. stored 25,000 barrels of Navy Gasoline 102 hot, windy days, under a Safvety Deck, with a total shrinkage of less than 1%. No vapor chamber, no combustion chamber, no fire hazard. Gasoline has been boiled under a Safvety Floating Deck without ignition.

**Write for Complete Catalog**—reproducing results of actual tests, photographs of installations, letters from users, detailed plans of construction and full description. Before redecking any of your present tanks or specifying decks for new tanks, consider the

**Safvety Floating Tank Deck**

PREVENTS OIL TANK FIRES and EVAPORATION

*Manufactured by*

**COLUMBIAN STEEL TANK COMPANY**

**1405-1625 West 12th Street KANSAS CITY, MO.**

*Under an exclusive license agreement for the United States with the patentee.*

CASPER, WYOMING
321 Moose Bldg.

TULSA, OKLA.
Owasso and Frisco Tracks

DALLAS, TEXAS
210 Southwestern Life Bldg

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*Partition Mounted, 3-Point Supported Truck Tanks.*
***Vapor Proof Bolted Steel Tanks for Field and Refinery.***
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*Tanks for the Farm, Grain Bins.*
*Plates, Sheets, Angles, Channels, etc.*

# RECENT REFINERY PATENTS ISSUED

BY STAFF REPRESENTATIVE

**Washington, D. C.**—The following patents of interest to the refining industry have been issued by the United States Patent Office during the past month:

No. 1,482,438: Process of converting oils; issued to Almer McD. McAfee, Port Arthur, Texas, assignor to Gulf Refining Company, Pittsburgh, Pa. The patent covers a process of converting higher boiling petroleum oils into lower boiling oils which comprises heating the same in admixture with anhydrous aluminum chlorid to gradually increasing temperature, collecting and condensing the lower boiling hydrocarbons formed, and at the time the temperature reaches such a stage that the aluminum chlorid substantially free of oil is driven from the mixture, collecting and condensing such aluminum chlorid at a point removed from the mixture, removing residual matter from the heating zone and returning the so collected aluminum chlorid thereto.

No. 1,482,677: Shale retort; issued to Charles J. Dunten, Orcutt, Calif. In an apparatus having a distilling chamber for extracting hydrocarbon oils from shale and similar material, means for introducing shale in successive charges to the upper end of said chamber, said means comprising a receiving passageway, a plurality of horizontal gate valves in spaced relation with each other disposed in said passageway, means for removing spent shale from the lower end of said chamber, said means comprising a discharge passageway, a plurality of horizontal gate valves in spaced relation with each other disposed in said passageway, a vertical rotatably driven crank shaft positioned adjacent to said apparatus, and means on said shaft adapted to engage said gate valves to alternately operate said valves for the admission and discharge of shale.

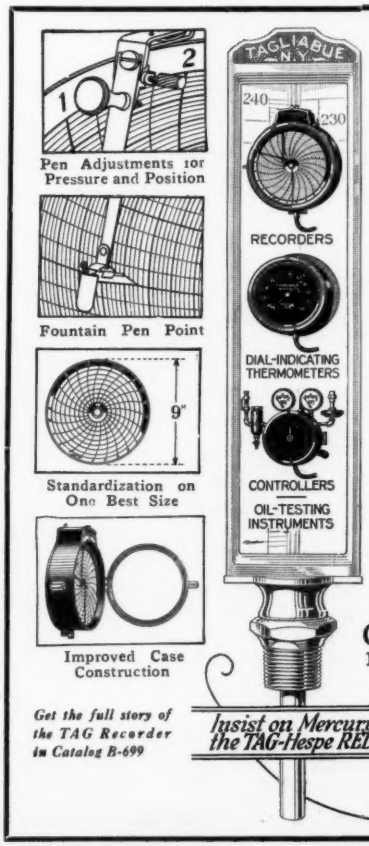
No. 1,484,445: Method of treating hydrocarbons; issued to Carbon P. Dubbs, Wilmette, Ill., assignor to Universal Oil Products Company, Chicago. A process of producing gasoline-like products from heavier hydrocarbons of a boiling point higher than gasoline, consisting in subjecting the heavier hydrocarbons to a cracking temperature while in a still to decompose the same, in permitting an expansion of generated vapors in a suitable vapor space, in passing the vapors from said vapor space through a passageway to a reflux condenser located away from the still, in causing a retarded flow of the vapors in a restricted stream through said reflux condenser, in separating the heavier insufficiently cracked vapors from the gasoline-like vapors by condensing said substantially heavier vapors during their retarded flow through the reflux condenser without substantially condensing the gasoline-like vapors, by maintaining the temperature of the reflux condenser such as to condense the vapors that do not have a sufficiently low boiling point by the application of a temperature controlling medium to said reflux condenser, in recracking the reflux condensate, in discharging the uncondensed gasoline-like vapors from the reflux condenser to a final condenser without again admitting said vapors to the cracking still, in collecting the condensed gasoline-like oil, and in maintaining a superatmospheric pressure on the oil undergoing distillation in the still, and on the vapors while in the vapor space and during their retarded travel through the reflux condenser and while in the final condenser.

No. 1,484,513: Continuous method of cracking hydrocarbon oils; issued to Ernest O. Linton, Indiana Harbor, Ind., assignor to Linton Gasoline Process Company, Chicago. A method of cracking heavy hydrocarbon oils, which consists of passing such oil as a thin sheet or film in continuous flow over heated surfaces within an externally heated still chamber, whereby vaporizable constituents are freely liberated into the still spaces, and are there subjected to a cracking temperature, permitting the hot vapors to expand into a heated expansion chamber, subjecting the vapors therein to further heating at a maintained cracking temperature, condensing the cracked vapors, and withdrawing the liquid residuum.

No. 1,484,612: Process for treating hydrocarbons; issued to Stephen Louis Gartlan, Toronto, Ont., Can., assignor of 55 one-hundreths to Albert Edward Gooderham, Toronto, Can. A cracking process for the production of lower boiling liquid hydrocarbons which consists of vaporizing liquid hydrocarbon at relatively low temperatures, continuously transferring all the evolved vapors from the vaporizing zone to a pressure zone separate from the vaporizing zone and maintaining a low pressure in the latter, and then altering these vapors into a lower boiling hydrocarbon by suddenly applying intense pressure on the vapors and suddenly releasing the compression after the pressure has been applied.

No. 1,484,922: Method of recovering gasoline; issued to La Van Warren, Okmulgee, Okla. A method of recovering gasoline, consisting of collecting a pool of heated oil in a closed container, introducing field gas into thhe pool of oil to pass through into the condenser space above the oil, spraying heated oil into said space to meet the gas, retarding the upward passage of the gas and the downward passage of the oil throughout the entire tranverse area of the container so as to subject all parts of both elements to retardation and conducting the gas into a condenser.

No. 1,485,083: Apparatus for cracking hydrocarbons and recovering gasoline; issued to Meinhard H. Kotzebue and Levi M. Bowman, Tulsa, Okla. A


**Features of the TAG Recording Thermometer**

Inside the case you will find the reason for the EXTRAORDINARY RUGGEDNESS AND ACCURACY of TAG Recorders. Distinctive structural features contribute to this superiority. By reason of a patented cam arrangement, the TAG is the ONLY Recorder with uniform chart graduations for ALL ranges. A special seasoning process prevents "setting" of the spiral spring. The development of a single-piece welded bulb and of a capillary tube of exceptionally fine bore are other TAG achievements.

Pen adjustments for pressure and position, fountain pen-point, non-corrodible inverted pen arm, clock starter, improved chart holder and other features assure maximum operating convenience.

By standardizing on one best size of chart, 9 in. in diameter, manufacturing costs have been reduced, making possible unusual refinement of construction at the usual price.

C. J. TAGLIABUE MFG. CO.
18-88 THIRTY-THIRD ST., BROOKLYN

*Get the full story of the TAG Recorder in Catalog B-699*

*Insist on Mercury Thermometers with the TAG-Hespe RED Reading Column*

SINCE 1769

TAGLIABUE MFG. CO. N.Y.

cracking tube extending through a heater, spaced sections of steel wool within said tube adjacent to its intake end and at one side of the heater, gravel between said sections of steel wool, reticulate discs within the tube to confine said steel wool and gravel in place, said tube having an apertured outlet plate therein and adjacent to its outlet end and having an otherwise unobstructed internal passage within and across the heater.

### What Can Be Expected From Export Market?

(Continued from page 12)

rate on the oil shipped is the same as if the oil was shipped in cargo lots, and that the barrel is actually transported free. While it is not practical to make shipments in barrels if the oil is to remain therein for a considerable length of time after shipment has been received, nevertheless, a very large percentage of our exports is shipped in this manner, and the bulk cargo carrying vessel will never entirely supplant the container that has been used continuously since the very start of our industry.

England and France, of course, afford a greater outlet for export than other European countries. Time will not permit of considering the prices obtained today in these countries for all the various petroleum products; however I am sure you will be interested in considering for a moment prices in these countries with reference to gasoline and kerosene. In London today on the basis of an American gallon, 64 gravity 375 end point gasoline is being sold to the consuming trade for 34.4 cents and 58 gravity navy for 31.4 cents delivered in cans or through pumps. An extra charge of three pence per gallon, or about four and one-half cents is made if the cans are not returned. Prime white kerosene is selling for 20.9 cents.

In Paris very little gasoline is sold within city limits on account of extra duty. Without city duty 64 gravity 375 end point gasoline is selling for 28.8 cents delivered in cans and 27.7 cents through pumps. Fifty-eight gravity navy is selling for 25.6 cents in cans and 25.1 cents through pumps. Prime white kerosene 19.9 cents in cans and 19.6 cents through pumps. In ascertaining these prices in American money, we must, of course, give due consideration to the rate of exchange at the time prices are computed.

Reviewing the economic conditions of Europe, perhaps, now, as in no other time since the close of the war, have the big powers really gotten down to a working basis dominated by the most important factor necessary to attain success, "common sense." The outstanding issue of the moment is the report of the Reparation committee, which, when finally submitted, undoubtedly will show Germany can pay reparations demanded by the allies. France, after a period of the most strained attempts at special tax legislation, has finally voted in favor of and passed a new tax law, which, when in operation, will add much to her treasury, without, as has been stated, working a hardship on her people. England has chosen a leader from the labor class, who pledges no radical actions but curtailment of all unnecessary expenses and fostering of a government built upon sound business principles. Italy, under the guiding hand of Mussolini, is forging ahead with a speed undreamed of a short time ago, even by her most ardent admirers. Spain has finally adjusted her internal difficulties, and has come to realize the necessity of conducting her affairs with the spirit of the times.

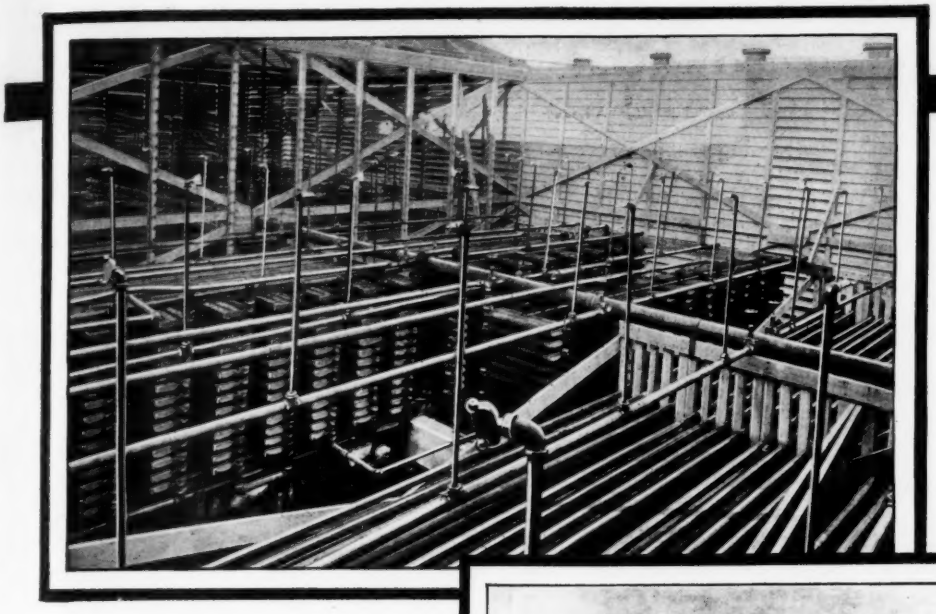
The subject which has been assigned to me is so big in its scope, that I felt myself incapable of doing it justice. The remarks I have made may, in a meagre way, convey a few conditions and impressions, and though I have great hesitancy in making predictions, nevertheless, reviewing the economic conditions throughout Europe, and considering that all important factor, supply and demand, we have just cause to the belief that the American Petroleum Exporters, should, during the year 1924, continue to do a large volume of business, unless our prices should reach the point where, when import duties and taxes are added and should foreign exchange fall to such a low level the cost becomes so high as to actually be beyond the reach of the ultimate consumer.

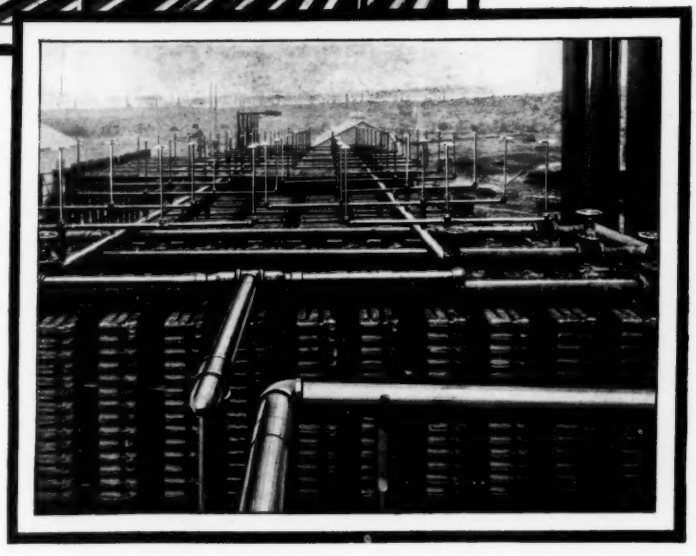
WIRE AKIN
for
COMPRESSION and Absorption Gasoline
Swift Shipments from
OKLAHOMA
TEXAS LOUISIANA
We make and market all grades of natural gasoline. You can get what you want, right on the dot, when you entrust your order to Akin.
THE AKIN GASOLINE CO.
Exchange National Bank Building
TULSA :—: :—: OKLAHOMA

## New Book on Fire Foam Extinguishing Systems

**New York, March 1.**—In connection with the use of their new product, Amdyco, a foam stabilizer for fire foam extinguishing systems, the American Dyewood Company has published a bulletin on the installation, operation maintenance and inspection of foam systems for the extinguishing of oil fires.

This book is being sent to the trade and can be had upon request to the American Dyewood Company, New York City, New York.





## *The* Test

Roeser & Pendleton made a test installation of 5,000 square feet of Sterling Oil Condensing Sections in their Absorption Plant No. 1, Breckenridge, Texas. The sections were installed in space originally filled with coils. Note, in the illustration shown above, space unfilled and the absence of supports.

## *The* Result

The result of this test was the installation of 35,000 square feet of Sterling Sections in their Plant No. 2, also at Breckenridge. The photograph at the right shows this large installation.

W. L. Seeley, of Breckenridge, Texas, was the Engineer in charge of both installations.

ROESER & PENDLETON found, as many other companies have found, that, in addition to saving space and eliminating supports, Sterling Sections are cheaper to install than coils; they condense more rapidly, reduce receiving house temperatures, last longer, are easy to remove for cleaning, repair or replacement.

Sterling Condensing Sections are operating efficiently in both refineries and gasoline absorption plants. One of our engineers will be glad to call and tell you how they can be used economically and efficiently in your plant. For convenience, simply send your name on your letterhead to the address below.

# STERLING OIL CONDENSING SECTIONS

## AMERICAN RADIATOR COMPANY

*Industrial Sales Offices:* 1807 Elmwood Avenue, Buffalo, N.Y.

Immediate shipments made from

KANSAS CITY, MO. SPRINGFIELD, OHIO BUFFALO, N.Y.

Tell them where you saw the ad

# The Reeves Vertical Gas Engine-Compressors for Gas Booster Plants

A few of the reasons why leading companies and engineers are purchasing the Reeves Gas Engines and Compressors.

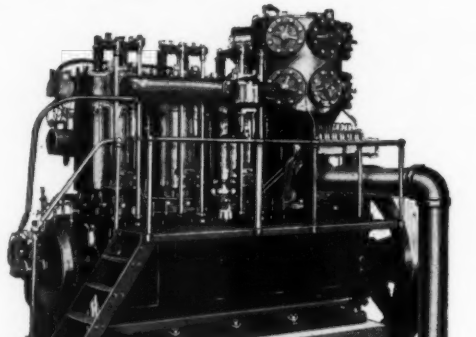
They know the Reeves unit is not an experiment, having proven its reliability and worth over a period of about twenty years successful service.

Account of the simplicity of operation; low fuel and maintenance cost per horse power. One user just reported having operated last four units 16 months without shutdown.

All Compressors equipped with "Hope" Biplane, Patented, easy operating, high speed Valves.

Saving in installation time partly pays for unit.

Saving in plant construction cost from 20 to 50 per cent depending on location.



Engine Sizes:
40 H. P. up to 250 H. P.

Engine-Compressor Sizes:
60 H. P. up to 160 H. P.

Consulting and Contracting Engineers in Natural Gas and Oil.

HOPE ENGINEERING & SUPPLY CO.
Mt. Vernon, Ohio, U.S.A.

Branches
Pittsburgh, Penna.
Tulsa, Okla.
Casper, Wyo.

# Interior View - -
## 55,000 Barrel All-Steel Gas-Tight TANK

Our service includes tanks of all capacities, stills, agitators, stacks, condenser boxes, vapor towers, heat exchangers, walkways, loading racks, oil filters, steel buildings, "Everything in Steel for the Oil Industry."

# Kansas City Structural Steel Co.

General Offices and Plant
21st and Metropolitan Ave.
Kansas City, Kansas

*"Nearest the Field"*

Sales Offices:
805 Daniels Bldg., Tulsa, Okla.
505 Huntzinger Bldg., Kansas City, Mo.

Tell them where you saw the ad

# Mid-Continent Refinery Operations

AS OF FEBRUARY 1, 1924

### ARKANSAS

| | Capacity | Now running |
|---|---|---|
| Abner Davis, El Dorado | 60 | SD |
| Arkansas Ref. Co., Ft. Smith | 1,000 | 500 |
| Arkansas P. & R. Co., El Dorado | 1,000 | SD |
| Cross Ref. Co., Smackover | 2,500 | 1,500 |
| Farmer Oil & R. Co., Taxarkana | 1,000 | 200 |
| Four States Ref. Co., Texarkana | 400 | SD |
| Griscon Ref. Co., El Dorado | 750 | SD |
| Home Ref. Co., Camden | 500 | 200 |
| Home O. & R. Co., Hot Springs | 500 | 100 |
| Jones Bros. & Tatum, El Dorado | 1,000 | SD |
| Kettle Creek Ref. Co., Pearson | 3,500 | 3,200 |
| Lion O. & R. Co., El Dorado | 10,000 | 6,800 |
| Newark Ref. Co., El Dorado | 1,500 | SD |
| Pine Bluff Ref. Co., Pine Bluff | 1,500 | 700 |
| Root Refineries, El Dorado | 3,000 | 2,000 |
| Shippers Pet. Co., El Dorado | 1,800 | SD |
| Ouachita Valley O. & R. Co., El Dorado | 1,000 | 70 0 |
| Union Pipe Line & Ref. Co., El Dorado | 4,000 | SD |

### KANSAS

| | | |
|---|---|---|
| Associated P. & R. Co., El Dorado | 1,000 | SD |
| Bell P. & R. Co., El Dorado | 700 | SD |
| Commonwealth O & R. Co., Moran | 800 | 600 |
| Derby Oil Co., Wichita | 5,000 | 1,600 |
| Chemical O. & G. Co., Osawatomie | 1,000 | SD |
| El Dorado Ref. Co., El Dorado | 4,000 | 1,700 |
| Gibralter Ref. Co., Hutchinson | 2,000 | 1,500 |
| Golden Rule Ref. Co., Wichita | 800 | 800 |
| Great Western Pet. Co., Florence | 2,000 | 200 |
| Great Western Ref. Co., Erie | 1,500 | SD |
| Industrial Ref. Co., El Dorado | 1,500 | SD |
| Kanotex Ref. Co., Arkansas City | 4,500 | 3,600 |
| Kansas City Ref. Co., Kansas City | 5,000 | 4,000 |
| Kansas Oil Ref. Co., Coffeyville | 2,000 | SD |
| Kansas Texas Oil Ref. Co., Wichita | 1,500 | SD |
| Interstate Ref. Inc., Centropolis | 1,600 | SD |
| Lesh Refining Co., Arkansas City | 1,500 | SD |
| Grant Oil Co., Augusta | 2,500 | 600 |
| Skelly Oil Co., El Dorado | 12,000 | 5,300 |
| Mutual Oil Co., Chanute | 1,500 | SD |
| Mecca Ref. Co., Augusta | 2,500 | SD |
| Marshall & Co., Sheffield | 2,500 | 200 |
| Moore Ref. Co., Arkansas City | 4,500 | 2,200 |
| McCree Pet. Co., Baxter Springs | 600 | SD |
| McWhorter-Chanute Ref. Co., Chanute | 200 | SD |
| Miller Pet. Co., Humbolt | 1,500 | 1,000 |
| National Ref. Co., Coffeyville | 5,000 | 4,600 |
| North American R. Co., Rosedale | 700 | SD |
| Peerless O. & R. Co., Chanute | 3,000 | 1,600 |
| Richardson Ref. Co., El Dorado | 2,000 | 700 |
| Red Bird Ref. Co., Fredonia | 800 | 200 |
| Sinclair Ref. Co., Argentine | 10,000 | 7,500 |
| Sinclair Ref. Co., Coffeyville | 7,000 | 7,200 |
| Sterline Oil & Ref. Co., Wichita | 5,000 | 1,500 |
| Standard Oil Co., (Kansas) Neodesha | 12,000 | 1,100 |
| Vickers Pet. Co., Potwin | 1,800 | 1,000 |
| White Eagle Oil & Ref. Co., Augusta | 6,500 | 6,500 |

### LOUISIANA

| | | |
|---|---|---|
| Caddo Central O. & R. Co., Shreveport | 5,500 | 5,000 |
| Caddo Central Oil & R. Co., Shreveport | 3,500 | 2,500 |
| International O. & G. Co., Cedar Springs | 900 | SD |
| Homer Ref. Co., Homer | 250 | SD |
| Leeton Ref. Co. Shreveport | 1,000 | SD |
| Louisiana Pet. Prod. Co., Bossier | 6,000 | 500 |
| Louisiana Oil & Ref. Co., Shreveport | 6,500 | 6,500 |
| Red River Ref. Co., Critchton | 1,800 | SD |
| Paramount Pet. Co., Superior | 3,000 | SD |
| Rogers Ref. Co., Shreveport | 1,500 | SD |
| Shreveport O. & R. Co., Shreveport | 4,500 | 4,000 |
| The Texas Co., Arlda | 10,000 | 7,500 |
| Union Ref. & P. L. Co., Oil City | 1,000 | SD |
| Union Ref. & P. L. Co., Homer | 1,000 | SD |

### MISSOURI

| | Capacity | Now running |
|---|---|---|
| Wilhoit Ref. Co., Joplin | 1,500 | 1,200 |
| Standard Oil Co. (Indiana) | 15,000 | 10,000 |

### OKLAHOMA

| | | |
|---|---|---|
| Acme Ref. & P. L. Co., Jennings | 2,600 | SD |
| Allied Ref. Co., Okmulgee | 2,000 | 1,000 |
| Associated P. & R. Co., Yale | 1,000 | SD |
| Barnsdall Ref. Co., Barnsdall | 3,000 | 3,500 |
| Bay State Ref. Co., Healdton | 1,000 | SD |
| Beaver P. & R. Co., Dilworth | 700 | SD |
| Big Six Ref. Co., Sapulpa | 3,000 | SD |
| Bison Ref. Co., Quay | 1,000 | SD |
| Blue Ribbon Ref. Co., Walters | 500 | SD |
| Bolene Ref. Co., Enid | 3,600 | 3,500 |
| Bristow Gasoline & Sup. Co., Bristow | 1,200 | 1,000 |
| Buffalo Ref. Co., Yale | 1,000 | SD |
| Cushing Ref. Co., Cushing | 2,500 | 1,300 |
| Cameron Ref. Co., Ardmore | 3,500 | 2,150 |
| Canfield Ref. Co., Yale | 500 | 50 |
| Carter Oil Co., Cartoco | 12,000 | SD |
| Champlin Ref. Co., Enid | 14,000 | 6,000 |
| Chestnut & Smith Corp., Sand Springs | 5,000 | SD |
| Chas. F. Noble O. & G. Co., Oklahoma City | 2,000 | SD |
| Coleman-Nelson Corp., West Tulsa | 2,000 | SD |
| Coleman-Nelson Corp., Haskell | 1,000 | SD |
| Constantin Ref. Co., Devol | 10,000 | SD |
| Constantin Ref. Co. West Tulsa | 4,500 | SD |
| Cosden & Co., West Tulsa | 35,000 | 25,000 |
| Cushing Ref. & Gaso. Co., Blackwell | 12,500 | 700 |
| Anderson & Prichard Oil Corp., Oklahoma City | 1,500 | 1,000 |
| Daisy Bell Pet. Co., Wilson | 2,000 | 300 |
| Damascus Ref. Co., Lawton | 1,500 | SD |
| El Dorado Ref. Co., Yale | 700 | SD |
| Equality Ref. Co., Oilton | 1,000 | SD |
| Empire Refs. Inc., Cushing | 5,000 | 3,500 |
| Empire Refs. Inc., Okmulgee | 2,500 | 2,400 |
| Empire Refs. Inc., Okla. City | 2,500 | SD |
| Empire Refs. Inc., Ponca City | 4,500 | 3,500 |
| Francis Ref. Co., Francis | 5,000 | SD |
| Frederick Ref. Co., Frederick | 5,000 | SD |
| Fairmont Ref. Co., Fairmont | 2,500 | SD |
| Federal Oil & Ref. Co., Cushing | 1,500 | SD |
| Globe Oil & Ref. Co., Blackwell | 4,000 | 1,200 |
| Gilmer Oil Co., Ringling | 800 | 700 |
| Golden Belt Ref. Co., Okla. City | 200 | SD |
| Grandfield Oil & Ref. Co., Grandfield | 3,000 | SD |
| Hewitt Ref. Co., Hewitt | 1,600 | 900 |
| Home Oil & Ref. Co., Yale | 2,000 | SD |
| Indian Chief Ref. Co., Cushing | 1,800 | SD |
| Loraine Pet. Co., Bristow | 2,500 | 2,000 |
| Imperial Ref. Co. Ardmore | 6,000 | 5,800 |
| Indiahoma Ref. Co., Okmulgee | 9,000 | SD |
| Illinois Oil Co., Cushing | 3,000 | 1,300 |
| Inland Ref. Co., Cushing | 5,000 | SD |
| Johnson Oil Ref. Co., Cleveland | 3,000 | 2,800 |
| Lawton Ref. Co., Lawton | 1,100 | SD |
| Local Refining Co., Okla. City | 1,000 | 400 |
| Marland Ref. Co., Ponca City | 12,000 | 10,000 |
| Marland Ref. Co., Covington | 1,000 | SD |
| Maud Oil & Ref. Co., Maud | 400 | SD |
| Mecca Ref Co., Allen | 1,600 | SD |
| Meridian Ref. Co., Okmulgee | 3,000 | SD |
| Meridian Ref. Co., Hominy | 1,000 | SD |
| Mid-Co. Pet. Co., West Tulsa | 7,000 | SD |
| Navajo Ref. Co., Sapulpa | 1,500 | SD |
| North American Ref. Co., Pemeta | 1,500 | SD |
| Nyanza Ref. Co., Wilson | 3,500 | 1,200 |
| Oil State Ref. Co., Enid | 2,500 | 800 |
| Pontotoc Pipe Line & Ref. Co., Allen | 1,500 | 300 |
| Omar Ref. Co., Garber | 2,500 | 1,500 |
| Oklahoma P. & R. Co., Muskogee | 2,500 | 1,600 |
| Pawhuska Ref. Co., Pawhuska | 1,000 | SD |
| Waite Phillips Co., Okmulgee | 5,000 | 3,500 |
| Pierce Oil Corp., Sand Springs | 9,000 | 5,000 |
| P. & R. Corp., Blackwell | 2,500 | 1,800 |
| P. & R. Corp., West Tulsa | 6,000 | 5,500 |
| Pure Oil Co., Ardmore | 7,000 | 2,500 |
| Pure Oil Co., Cushing | 6,500 | 5,500 |
| Pauline Ref. Co., Hampton | 1,200 | 500 |
| Powerine Oil Co., Billings | 500 | SD |
| Pioneer Pet. Co., Guthrie | 2,500 | SD |
| Sheridan Ref. Co., Newkirk | 2,000 | SD |
| Rock Island Ref. & P. L. Co., Duncan | 1,500 | 1,300 |
| Santa Fe Oil & Ref Co., Ardmore | 5,000 | SD |
| Shaffer Oil & Ref. Co., Cushing | 6,500 | 1,500 |

**A New Name for an Old Friend**

WHAT'S in a name, anyway? The refinery construction work we are doing under the name "Pioneer" is just the same high grade as when it bore the name "Tulsa Boiler and Sheet Iron."

For eighteen years, as the "Tulsa Boiler and Sheet Iron Works" we have turned out tanks and refinery steel construction that made good friends for us among the wise buyers of the Mid-Continent. We pioneered in giving these people "close to home" service on the best kind of work.

Now, under the new name, The Pioneer Tank and Boiler Company, we're all set with the men, machinery and money to keep on growing under the Pioneer banner like we did when Tulsa Boiler and Sheet Iron was on our letterhead.

There is no change in our organization.

Get Pioneer quotations on tank and refinery construction work.

**PIONEER TANK & BOILER COMPANY**

(Formerly Tulsa Boiler and Sheet Iron Works)

Box 1926, TULSA, OKLA.

## THE FULTON HOUSE REGULATOR WITH AUTOMATIC CUT-OFF FOR NATURAL GAS

Designed and especially adapted to reduce pressures for use in supplying private dwellings, whether connected to a high or low pressure service.

Made to operate with absolute safety regardless of what the inlet pressure may be (up to 500 pounds) and to regulate at one reduction to the lowest pressure desired.

For extremely high pressures, no other regulator has proved as safe and satisfactory. Where other regulators have blown to fragments, our regulators have never failed nor had an accident.

Write for complete description of this and other FULTON regulators.

*Write us for further information*

**Chaplin-Fulton Mfg. Co.**
**28-36 Penn Ave., Pittsburgh, Pa.**



# LUCEY

"Wherever LUCEY There's Oil"

## STEEL CASTINGS FOR REFINERIES

Open Hearth Process
Quick Delivery—Made in Houston
From One Pound to 8000 Pounds

Analysis of Every Heat Controlled in Our Own Laboratories, Insuring Uniform Quality.

Complete Pattern Shop, Machine Shops, Metallurgical and Engineering Staff at Your Disposal.

R. U. CULBERSON, Receiver
LUCEY MANUFACTURING CORPORATION OF TEXAS
Houston, Texas

Beaumont, Texas Shreveport, La. El Dorado, Ark. Mexia, Texas
Smackover, Ark. Corsicana, Texas Dallas, Texas

# STEEL


| | Capacity | Now running |
|---|---|---|
| Sapulpa Ref. Co., Sapulpa | 7,000 | SD |
| Southern Oil Corp., Yale | 6,000 | SD |
| Southern Oil Corp., Walters | 2,500 | SD |
| Sun Company, Yale | 4,500 | 2,200 |
| Southwestern Oil Corp., Enid | 1,800 | SD |
| Sinclair Ref. Co., Cushing | 5,500 | 5,500 |
| Sinclair Ref. Co., Muskogee | 2,000 | 800 |
| Sagimore Oil Corp., Grandfield | 2,000 | 1,700 |
| Texas Co., West Tulsa | 8,000 | 8,000 |
| Tidal Ref. Co., Drumwright | 4,500 | 3,300 |
| Tonkawa Pet. Co., Tonkawa | 1,500 | 200 |
| Texas Pacific C. & O. Co., Wynnewood | 1,500 | 1,500 |
| Travis Senter Ref. Co., Comanche | 1,500 | 1,000 |
| Transcontinental Oil Co., Boynton | 2,500 | 700 |
| Transcontinental Oil Co., Bristow | 5,000 | 5,000 |
| Turley Ref. Co., Okla. City | 2,500 | SD |
| Union Oil & Ref. Co., Grandfield | 2,000 | SD |
| Wagoner Ref. Co., Wagoner | 500 | SD |
| Wilcox Ref. Co., Bristow | 500 | 400 |
| Yale Oil Corp., Yale | 1,200 | 1,000 |
| **TEXAS** | | |
| American Oil Corp., Pioneer | 2,500 | 200 |
| American Ref. Co., Wichita Falls | 5,000 | 5,000 |
| H. E. Boner, Burkburnett | 700 | 200 |
| Boardman Oil Co., (was Manhattan) Wichita Falls | 750 | SD |
| The Pet. Corp., Electra | 2,000 | 1,100 |
| Buffalo Ref. Co., Sherman | 500 | 200 |
| Burk-Texas Ref. Co., Burkburnett | 1,200 | SD |
| DeLeon Ref. & P. L. Co., (was Rex) DeLeon | 1,500 | 150 |
| Clayton O. & R. Co., Dallas | 3,500 | 3,500 |
| Crystal Pet. Co., Burkburnett | 1,000 | 300 |
| Eastland-Pioneer Oil & Ref. Co., Cisco | 1,000 | SD |
| Empire Refs. Inc., Gainsville | 7,000 | 3,500 |
| Continental Ref. Co., Abilene | 400 | 200 |
| Gulf Ref. Co., Ft. Worth | 15,000 | 5,000 |
| Gorman Refining Co., Gorman (Dismantled) | | |
| Griswold Ref. Co., Electra | 2,000 | 2,000 |
| Humble O.&R. Co., Burkburnett | 1,500 | 950 |
| Invincible Oil Corp., Ft. Worth | 5,000 | SD |
| Interstate Gaso. Co., Iowa Park | 2,000 | SD |
| Iowa Park P. & R. Co., Iowa Pk. | 1,000 | 1,000 |
| Keystone Ranger Ref. Co., Wichita Falls | 2,000 | SD |
| Lone Star Ref. Co., Wichita Falls | 4,000 | 1,000 |
| Megargel O. & R. Co., Megargel | 500 | 150 |
| Miller Pet. Co., Wichita Falls | 2,500 | 2,500 |
| Mexia Oil & Ref. Co., Mexia | 600 | SD |
| Magnolia Pet. Co., Ft. Worth | 12,500 | 5,500 |
| Noble O. & G. Co., Burkburnett | 5000 | 3,000 |
| Nortex Ref. Co., Burkburnett | 2,000 | SD |
| North Texas Ref. Co., Greenville | 1,000 | SD |
| Owenwood Oil Corp., Burkburnett | 2,000 | SD |
| Oriental Ref. Co., Dallas | 5,000 | 450 |
| Oddessa Ref. Co., Ranger | 1,000 | SD |
| Orient Pet. Co., Wichita Falls | 2,000 | 550 |
| Pierce Oil Corp., Fort Worth | 10,000 | SD |
| Panhandle Ref. Co., Wichita Falls | 4,500 | 2,700 |
| Associated P. & R. Corp., Ft. Worth | 2,000 | SD |
| Primrose Ref. Co., Wichita Falls | 1,500 | 1,000 |
| Interstate Ref., Inc., Ranger | 2,500 | 1,000 |
| Haggeman Ref Co., Tiffin | 2,000 | 250 |
| Star Ref. Co., Ft. Worth | 1,500 | 600 |
| State Ref. Co., Dalls | 1,000 | SD |
| Sunshine State Ref. Co., Wichita Falls | 2,500 | 2,000 |
| Tidal Western Ref. Co., Burkburnett | 3,000 | 1,500 |
| Texas Company, Dallas | 15,000 | 8,000 |
| Texas Products Ref. Co., Waxahachie | 2,000 | SD |
| Texhoma O&R Co., Wichita Falls | 4,500 | 3,800 |
| Tiger O. & R. Co., Breckenridge | 1,500 | SD |
| Transcontinental Oil Co., Ft. Worth | 5,000 | 700 |
| Travis Ref. Co., Burkburnett | 1,000 | 350 |
| Uniform Pet. Co., Burkburnett | 4,000 | SD |
| Virginia Ref. Co., Dublin | 2,500 | SD |
| Victor Ref. Co., Burkburnett | 2,000 | SD |
| Wagoner Ref. Co., Electra | 2,200 | 2,500 |
| Walker Cons. R. Co., Iowa Park | 2,500 | SD |
| White Eagle Oil & Ref. Co., Ft. Worth | 5,000 | 3,200 |
| Waco Ref. Co., Waco | 5,000 | SD |
| Wortham Ref. Co., Wortham | 400 | SD |
| World Ref. Co., Bridgeport | 800 | SD |
| Texas Total | 178,200 | |

## Natural Gasoline Production In California Passes Its Peak

**Los Angeles, Calif., March 1.**—Production of natural gasoline in Southern California during the month of January showed a decline of 1,205,245 gallons when compared with December, according to figures compiled by Victor W. Killick, statistician for the Independent Petroleum Marketers Association at Los Angeles. Peak production of natural gasoline was reached in December with a total production of 17,416,415 gallons, and production is expected to show a continued decline for the next few months.

The decline quickly followed the decline in production of crude in the big flush pools and new fields cannot be expected to produce sufficient natural gasoline to offset the decline in the older fields. Three new plants are being built at Torrance and they will be in full operation early in March.

During December, the gasoline production at Torrance was 127,000 gallons against 259,000 gallons in January. But in December the production at Santa Fe Springs was 8,349,093 gallons against 7,918,354 gallons in January. At Long Beach the production in January was about half million gallons under December production, while the decline at Huntington Beach was almost as much.

Natural gasoline is fairly strong this week at 13 to 14 cents a gallon, spot sales, while contract prices are some 4 cents less. As a result of the strong market for natural gasoline, the boot legger market for gasoline has been forced to stiffen prices. The prevailing price for gasoline at filling stations in Los Angeles is now 19 cents, and there are still a few stations in the city selling from two to three cents under the prevailing price.

## Crown Refinery at Houston Planning to Resume Work

**Houston, Texas, March 13.**—Preparatory to resuming operations, considerable improvement and overhauling is being done on the refinery of the Crown Oil Company, located near Houston. The refinery has been shut down since June 1 of last year. A definite date of starting operations again has not been set, but the improvement work is well under way.

Modern unloading and loading lines have been installed at a cost of between $25,000 and $30,000.

On March 2, an Atlantic tanker was loaded at the Crown Wharf at the rate of 3,000 barrels an hour. This capacity is to be increased until tankers can be loaded at the rate of 7,000 barrels an hour. To facilitate this work, a 200 horse power direct connected Allis-Chalmers centrifugal pump is to be put in.

The plant when fully equipped will be prepared to handle a large terminal business. At the present time, approximately 14,000 barrels of Luling crude are being handled by the Crown Oil and Refining Company for the Atlantic Oil Producing Company.

At the Crown wharf, the ship channel has been deepened to 33 feet to make sure that any size tanker that enters the channel can tie up.

The company is contemplating the installation of large gasoline, kerosene and lube storage tanks to enable the handling of these products in bulk quantities.

The Crown Oil and Refining Company is a subsidiary of the United Central Oil Corporation, successor to the White Oil Corporation.

# Wichita Falls District Refiners Organize Pipe Line to Handle Own Crude Supplies

**Wichita Falls, Texas.**—The Wichita Pipe Line Company has been organized by nine independent refiners with plants at Wichita Falls and Iowa Park to construct a pipe line to the various producing areas in the lower part of Wichita and Archer Counties to handle their own crude oil, and it is planned to collectively purchase their crude needs through this new organization later on. The company is incorporated under the laws of Texas with a capitalization of $500,000, of which $250,000 has been subscribed, and headquarters have been established at 309 City National Bank building, Wichita Falls. Such an organization has been proposed by the refiners in the North Texas district for several years, but conditions in the crude and refined markets caused the project to be postponed.

The refining companies that are supporting the new pipe line projects are: Panhandle Refining Company, American Refining Company, Ranger-Wichita Refining Company, Orient Petroleum Company, Primrose Refining Company, Lone Star Refining Company and Miller Petroleum Company, all of Wichita Falls, and Iowa Park Producing & Refining Company and Interstate Gasoline Company, both at Iowa Park. The officers of the Wichita Pipe Line Company are: Roy B. Jones, president; W. M. Priddy, vice-president; P. F. Gwynn, treasurer, and L. V. Hull, formerly vice-president of the Paragon Pipe Line Company, general manager. The directors are: Bert J. Shaw, O. H. Berryman, W. W. Silk, W. T. Davis, W. M. Priddy, Roy B. Jones and D. O. Johnson.

Materials are being ordered for the proposed line, which will consist of 6 inch pipe from Wichita Falls to the Wilmot-Wilson and Peterson pools in Archer County, a distance of about 25 miles, and about 25 miles of two and four-inch pipe will be required for gathering lines, as a net work of gathering systems will be built to all the pools within reach of the trunk line.

Present plans call for one main pump station, and two sub-stations, while a four-inch line will be extended from the trunk line at a point near the Wichita-Archer County line to Iowa Park to serve the two plants at that place. A 200-acre tank farm site has been acquired on a hill overlooking all of the refineries located at Wichita Falls, thereby permitting the use of gravity lines in making crude deliveries from storage to the Wichita Falls plants.

Right of way for the line from Wichita Falls to Holliday has been obtained from the Wichita Valley Railroad, and construction work is expected to begin about April 1.

The entire project is to cost between $350,000 and $400,000, according to officials of the company.

**London, England.** — Reports from Berlin are that a product by name of synthol, a synthetic substitute for gasoline, has been discovered by a Prof. Dr. Franz Fischer and Dr. Torsch, the former being director of the Kaiser Wilhelm Institute for Coal Research in Muelheim, Ruhr. It is a volatile oil derived from the water gas from coal, coke or half coke and is virtually free from hydrocarbons, it is said.

## North Texas Refiners Form Traffic Bureau

**Wichita Falls, Texas.**—Organization of the North Texas Petroleum Traffic Bureau has been completed with membership for the present limited to North Texas refining territory, the extent of which is to be defined at a subsequent meeting. The executive committee is headed by V. E. Jackson of Texhoma Oil and Refining Company.

Other members of the committee include Guy Mosley of the White Eagle Oil and Refining Company of Fort Worth, treasurer; E. E. Sowers of the Tidal-Western Oil Company of Burkburnett, vice chairman; W. E. Campbell of Panhandle Refining Company, P. F. Gwynn of Iowa Park Producing and Refining Company, A. C. Holmes of Empire Refineries, Frank Burk of Chestnut and Smith and H. A. Allen of American Refining Company, Ed P. Byars of Fort Worth is secretary and commerce counsel.

## Adjust Freight on Oil For New Orleans Export

**Wichita Falls, Texas.**—Freight rates on refined products originating in the Wichita Falls, Burkburnett, Iowa Park and Electra refining centers for export shipment via the New Orleans port district were reduced effective March 12 from 24 and one-half to 20 and one-half cents per 100 pounds. This reduction amounts to about one-quarter of a cent per gallon on refined oil, and will place North Texas refiners on an equal basis with Dallas and Fort Worth plants.

The Denver and Katy railroads are the originating carriers affected by the new rate, while the New Orleans port district includes export terminals at Westwego, Baton Rouge and St. Rose. The latter port has had the reduced rate since January 1.

## Columbia Gas & Electric Increases Ohio Holdings

**Cincinnati, Ohio, March 6.**—A deal which will add $6,500,000 annually to the gross revenue of the Columbia Gas and Electric Company was made here recently. By this transaction, the Columbia Gas and Electric Company acquired from the Pure Oil Company all the common and preferred stock of the gas distributing companies in Columbus, Springfield and Dayton, Ohio.

The Columbia company is the largest distributor of gas in this part of the country. It owns or controls all the natural gas fields from which Cincinnati draws its supply and operates gas and light facilities of 40 other communities.

The company took possession of its new properties on February 29.


# A Timely Word on TANK CAR REPAIRS

WOULD A FIRST-rate cab company have its repairs done in any nearby garage? Not much! To have cars in first-class condition is too important. And so cab companies maintain thorough repair facilities of their own or else contract only with proven, reliable and substantial service organizations.

The same situation should prevail in the operation of tank cars, and in this connection you will be interested in the facilities of the North American Car Company, which maintains completely equipped repair shops at Chicago, Coffeyville, Kansas, and Tulsa.

These things merit your attention: convenience, experience, reputation, dependability, all embraced in the organization and plant of this company.

**NORTH AMERICAN CAR CO.**
**327 S. LaSalle St., Chicago**

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**Southwestern District Office**
**Petroleum Bldg., Tulsa**

# NORTH AMERICAN CAR CO.

***LESSORS OF TANK CARS***


## Zopf Sales Manager Youngstown Boiler

**Youngstown, Ohio, March 8.**—Announcement was made recently by the Youngstown Boiler and Tank Company of the appointment of F. B. Zopf as general sales manager with headquarters at Youngstown.

For the past 20 years Mr. Zopf has been identified with the Riter-Conley Company of Pittsburgh. During the past 10 years he was sales engineer for that company with headquarters at their main office in Pittsburgh. Mr. Zopf's experience has given him valuable information on steel tankage and oil refinery plate work.

## To Resume Work on Japanese Refinery

**Chicago, Illinois, March 8.**—O. H. Fairchild of the Universal Oil Products Company, left Chicago recently for Japan. He goes to Japan to supervise the completion of a refinery for the Nippon Oil Company.

Mr. Fairchild was in Japan during the recent earthquake and came to this country while construction work on the plant was held up. The refinery will use the Cross cracking process.

## M. W. Kellogg Company Agents Cross Process

**Jersey City, N. J.**—The M. W. Kellogg Company, manufacturers of pressure stills, hammer welded, high pressure piping and other refinery equipment with general offices and works in Jersey City, now are sales agents for the Cross cracking process. The Kellogg Company also is owner of the Fleming process for refining oils.

The company has a Mid-Continent office at 307 Kennedy building at Tulsa, Oklahoma, in charge of Paul Gerhard. L. H. Harvison of Jersey City is vice president and general manager of sales.

**Casper, Wyo.**—The United States Oil and Refining Company is planning to virtually treble the capacity of its refinery at Osage, Wyoming, by the addition of a 1000 barrel tube still and a 1000 barrel Cross cracking system.

**Lawrenceville, Illinois, March 8.**—Two additional standard Dubbs cracking units are being added to the refinery of the Indian Refining Company. These two units will give the refinery four standard 500 barrel units, the other two units having been in operation for about four months.

**Cleveland, Oklahoma, March 10.**—The Johnson Oil Refining Company has started construction work on two additional 500 barrel Dubbs cracking units. This company has been operating two Dubbs units for about four months.

**Bartlesville, Okla.**—The Empire Gasoline Company has purchased additional equipment for their gasoline plant at Okemah, Oklahoma, from Gas Engineering and Construction Company of Pittsburgh and Tulsa, sales agents for Clark Brothers Company of Olean, New York.

# The refiner who can install a Dubbs Cracking Process, but doesn't, really deserves what he gets

Universal Oil Products Company
Owners of the Dubbs Process
208 South La Salle Street Chicago

# Chemical Engineers to Meet Jointly With National Chemical Equipment Association

THE FIRST National Chemical Equipment Exposition will be held in the state armory, Providence, Rhode Island, June 22 to 27 inclusive, 1925, under the management of the Chemical Equipment Association and in conjunction with a regular four day meeting of the American Institute of Chemical Engineers.

The exposition will be restricted to displays of equipment, supplies, accessories and essential raw materials used by the chemical and chemically controlled industries.

"The First National Chemical Equipment Exposition has been called for by preponderant opinion in the chemical equipment field," according to a statement by the board of directors in making the announcement. "Current industrial conditions call for the development of direct and unconfused sales and educational contact with the buying fields.

"Both the executives, technical men and superintendents of industrial plants in the chemical and chemically controlled industries and the manufacturers of chemical equipment acutely need a common meeting place for the examination and display of essential equipment and operating supplies, where a trade atmosphere will prevail and the personal element, both among buyer and seller, be given opportunity for emphasis.

"It is to be noted that the First National Chemical Equipment Exposition will have no general admission, but a highly selective, directly interested attendance.

"It will admit by registration only, executives, banking and financial representatives and important stockholders of industrial companies in the chemical and chemically controlled industries, superintendents of these companies, engineers and technical men from these industries, and technical students and educators. There will be no admission fee.

"From an exhibitor's standpoint it will be conducted as a business event, with a minimum of aisle confusion and without long evening hours. From the visitor's point of view it will be staged equally as a business convenience, in which comprehensive inspection and comparison of equipment and examination of cost and performance data, adaptabilities to different processes, etc., etc., will be possible under time-saving but unhurried conditions.

"In addition it will embrace educational and social features bringing buyers and exhibitors into personal contact."

Special meetings additional to the regular sessions of the American Institute of Chemical Engineers, of trade associations in several of the chemically controlled industries, will be held in conjunction with the exposition also.

Floor diagrams will be issued by the committee promptly to interested companies. Exposition privileges will not be limited to members of the association, although, inasmuch as their cooperative preparation has brought the undertaking to a definite stage, they will receive preferential consideration in certain circumstances. Membership is open to reputable equipment and supply manufacturers.

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**San Antonio.**—Elliott Jones & Company, Inc., is revamping a battery of stills at its refinery here to manufacture a complete line of pale and red lubricating oils, and facilities will be completed by April 1 to turn out 1500 barrels daily. The skimming and cracking units will continue in operation as heretofore. Crude for the manufacture of the pale and red oils has been contracted for in the Three Rivers field Live Oak County, and deliveries will be made via tank cars, with a rate of 10½ cents per 100 pounds applying on the San Antonio, Uvalde and Gulf railroad. Considerable steel storage is also being added to the refinery.

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**Los Angeles, Calif.**—The Export Refining Company straight absorption gasoline plant at Torrance, being erected by the Southwestern Engineering Corporation of Los Angeles, should be in operation early in March, and will have a daily capacity of between 15,000 and 20,000 gallons of gasoline. Arrangements have already been made for connecting with a number of producers in the Torrance field.


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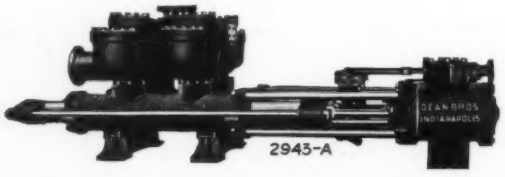


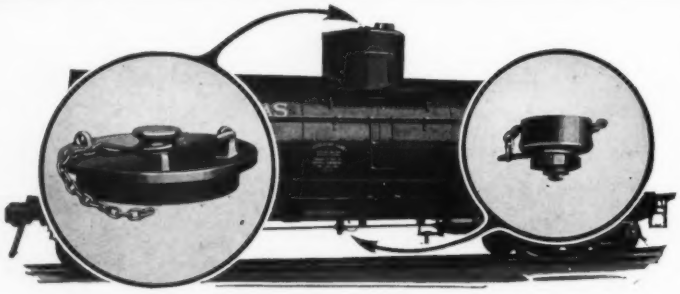

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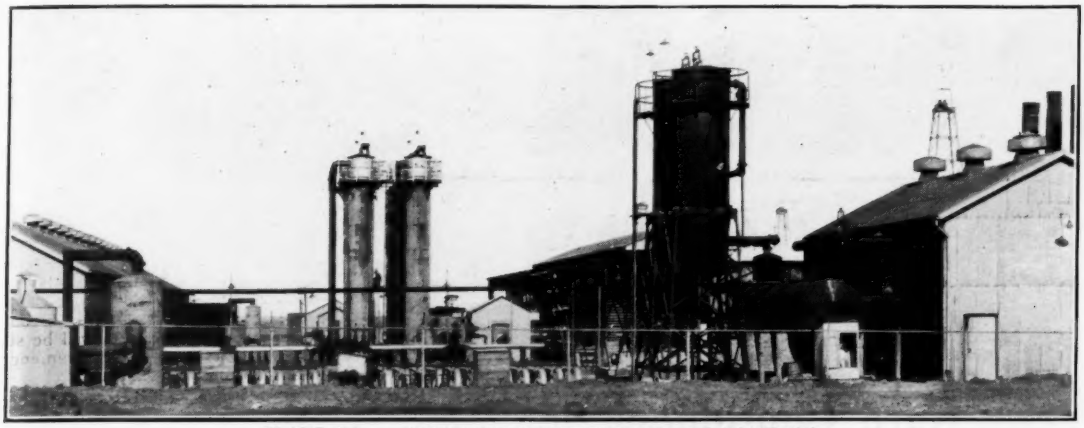

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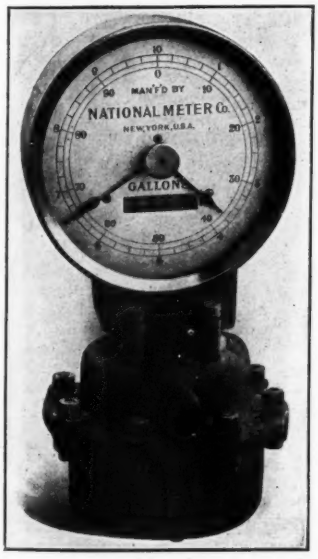


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## Mathieson Chlorine Tank Car Has Been Approved

The Mathieson multi-unit chlorine gas tank car, designed and operated by the Mathieson Alkali Works, Inc., is held entitled to the same freight rates and privileges as any tank car, by decision of the Interstate Commerce Commission. The commission upholds the contentions of the Mathieson company and the "safety first" principles embodied in this car design. The multi-unit car assures full compliance with the law by cleansing and accuracy in loading, and greatly increases the safety factor in handling and transportation by separating the units into 15 containers carrying exactly 2000 pounds each, as compared to a single unit chlorine tank car which carries 15 tons in a single tank. The requirements of the law that containers carrying chlorine must be loaded on accurate scales, and approved plant practice of thorough cleansing and inspection of each container at the manufacturer's works is, with certainty, observed by this type of equipment. The reduction of the hazard is also an important factor. The certainty of the consumer that he is getting exactly 2000 pounds of liquid chlorine in each container cannot be accomplished by any other type of equipment.


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CAST STEEL GATE VALVES

Reading Cast Steel Gate Valves are built for high temperature work, particularly. The flexible construction and suspension of the disc and the method of setting in and backing up the seat ring provide for keeping the valve tight when expansion begins. The steel you are familiar with in Reading Fittings.

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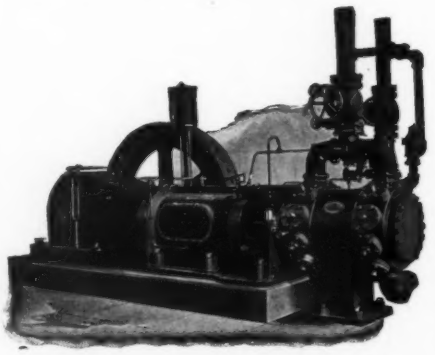


## Pure Oil-Humphreys Deal Closed; Offices to Dallas

**Smiths Bluff, Texas.**—The first cargo of refined products manufactured by the 26 unit cracking plant recently completed here on the Gulf Coast by the Pure Oil Company (formerly Humphreys-Pure Oil Company) moved out in February. This plant is equipped with the Cross cracking process, and is listed as a 15,000 barrel daily capacity cracking plant, although it is reported to be capable of skimming more than twice this amount of crude daily.

It is operated on Mexia crude at present, and is cracking about 10,000 barrels daily.

The plant began actual operations during first week in January, or nine months after the first stake was driven in the ground to start construction work. Crude for the plant is obtained from the Mexia, Currie and Corsicana-Powell fields in East Central Texas via the Pure Oil Pipe Line Company's line.

## Uncle Sam Oil Company Properties to Be Sold

**Kansas City, Mo.**—Properties of the Uncle Sam Oil Company, now in the hands of receivers, will be auctioned off in eight cities during March and April, as follows:

Kansas City, Kansas, 10 a. m. March 10; Chison, Kansas, 10 a. m. April 1; Independence, Kansas, 10 a. m. April 2; Alpine, Texas, 1 p. m. April 7; Fort Worth, Texas, 2 p. m. April 7; Tulsa, Oklahoma, 10 a. m. April 9; Hutchinson, Kansas, 2 p. m. April 10; and Minneapolis, Kansas, 10 a. m. April 12.

M. J. Grogan, manager of the Dallas offices of the Acme Petroleum Company, has resigned effective March 10 to accept a position with the Louisiana Oil and Refining Company at Shreveport, Louisiana, as manager of tank car sales of refined products.

**Wichita Falls, Texas.**—The Boardman Oil Company has purchased the 750 barrel daily capacity skimming plant of the Manhattan Petroleum Company located on the Denver railroad near Wichita Falls, and is to operate same. The purchase price is reported to be $7200. This plant was formerly known as the Dixie Refining Company, and was last operated by A. W. Pausky and others of Wichita Falls. The Boardman Oil Company has a number of retail service stations in Wichita Falls, and is also engaged in the jobbing business. Headquarters are at 304 Barwise street, Wichita Falls.

**Wichta Falls, Texas.**—The Griswold Oil Corporation, which is operating a 2500 barrel daily capacity skimming plant at Electra, has completed a 4-inch pipe line from the plant to its producing properties in the Wilmot-Wilson pool in Archer County, a distance of 28 miles. The line was built in three weeks and represents an expenditure of approximately $75,000.

# natural gasoline

## grade "a"

GRAVITY.....Not below 72° Be.
Not above 78° Be.
E. P.....Not over 375° F.
RECOVERY.....Not less than 90%

## grade "b"

GRAVITY.....Not below 76° Be.
Not above 82° Be.
E. P.....Not over 375° F.
RECOVERY.....Not less than 85%

## grade "c"

GRAVITY.....Not below 80° Be.
Not above 88° Be.
E. P.....Not above 350° F.
RECOVERY.....Not less than 78%

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GRAVITY.....Not below 88° Be.
Not above 92° Be.
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In order to meet the rapidly growing demands, we have materially increased our production of Natural Gasoline.

Your orders will receive prompt and careful attention from us.

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GRAVITY.....Not below 58° Be.
Not above 62° Be.
E. P.....Not over 437° F.
RECOVERY.....Not less than 91%

## grade "2"

GRAVITY.....Not below 58° Be.
Not above 62° Be.
E. P.....Not over 450° F.
RECOVERY.....Not less than 90%

## grade "3"

GRAVITY.....Not below 64° Be.
Not above 66° Be.
E. P.....Not over 440° F.
RECOVERY.....Not less than 88%

## grade "4"

GRAVITY.....Not under 66° Be.
Not over 70° Be.
E. P.....Not over 435° F.
RECOVERY.....Not less than 8[illegible]%

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It eliminates leakage.

It makes the joint a joint of strength.

No outside source of heat or power is required.

The necessary equipment is light and compact—any one can execute the welds, and the apparatus can be carried by one man.

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## Chestnut & Smith Improve Eastland Gasoline Plants

**Eastland, Texas.** — Approximately $150,000 is to be spent by the Chestnut & Smith Corporation in revamping and increasing the daily capacity of the natural gasoline manufacturing plant purchased early in February from the Cornite Gasoline Company of Dallas. This plant is located several miles west of Eastland, and on the commercial gas line of The Texas Company. The new owners have designated it as plant No. 109 and are adding sufficient absorbers to increase the capacity from six to about 18,000,000 cubic feet daily capacity. Additional gas has been contracted for by the Chestnut and Smith Corporation, and gathering lines are to be built to the wells.

Additional equipment being placed at the natural gasoline plant operated by the Chestnut & Smith Corporation on the C. L. Perkins land, near Pleasant Grove section of Eastland County, will increase the capacity of this plant from 14 to 26 million cubic feet of gas daily, making one of the largest in the county. Two new absorbers size seven feet by 60 feet have been erected, and are the largest ever introduced in Texas before. The improvements being made at this plant is expected to cost about $150,000.

## Empire Adds Units Ponca City Plant

**Ponca City, Okla.**—The construction of two cracking units at the Ponca City refinery of the Empire Refineries is announced. The project will include the erection of two cracking, separating and concentrating chambers, five furnaces, three stacks and one relief cooler.

The work is expected to be completed by June 1.

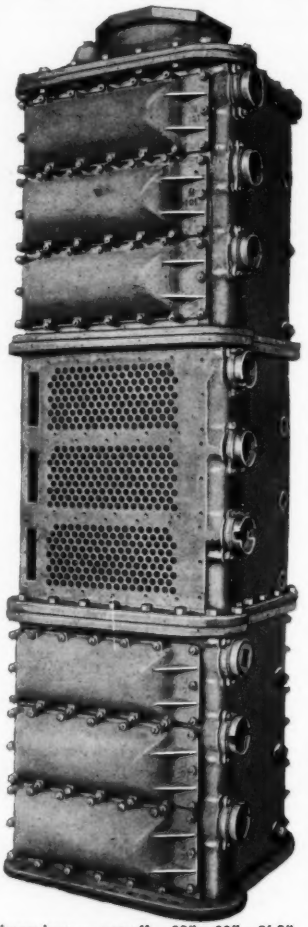
## Prairie Oil and Gas To Build Refineries

**Independence, Kans.**—Since its acquisition of the Producers and Refiners Corporation, the Prairie Oil and Gas Company plans the construction of one or more modern refineries in Kansas, it was revealed at a hearing in March before the Kansas state court. Under existing court orders the Prairie can only engage in the producing business in the State.

While nothing has been forthcoming as to the probable location of such refinery or refineries it is probable that Independence will be the site of one by reason of it being the junction point of the Prairie Pipe Line Company's crude handling facilities.


## Type B-540 Gasoline Condenser
(Patented)

*Compact — Efficient — Flexible*



Dimensions — overall, 30" x 30" x 9'-0"
(inc. top and bottom bonnets)

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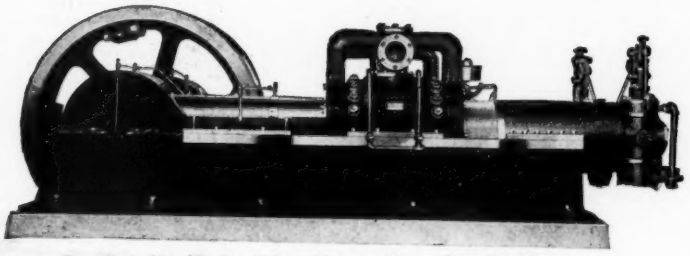
# THE NEW ENCLOSED TYPE



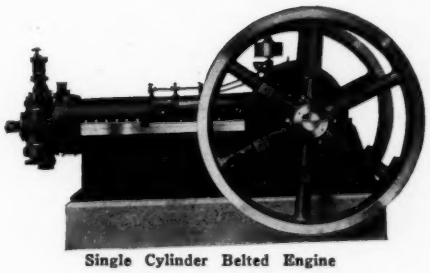
Direct Gas Engine Driven Vacuum Pump, Two Cylinder

**Watts-Miller Gas Engines and Direct Gas Engine Driven Compressors and Vacuum Pumps**

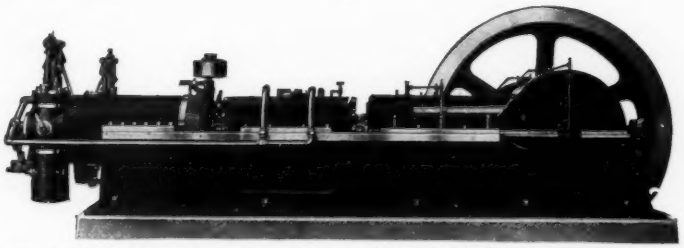
Pat. June 22, 1897; Oct. 6, 1914; April 13, 1915

**High Efficiency Gas Engines, Compressors, and Vacuum Pumps for Power Plant Equipment**

Sizes from 50 to 400 h. p.



Single Cylinder Belted Engine



Direct Gas Engine Driven Compressor, Two Cylinder, Single or Two Stage

Compressors particularly adapted to casing-head gasoline plants, gas pumping plants, and compressed air installations, in single and 2-stage machines to operate on practically all intake and discharge pressures. Continuous circulating filtering automatic oiling system.

## The Miller Improved Gas Engine Co.

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Frick-Reid Supply Co., Casper, Wyoming

Tell them where you saw the ad

# ÷ REFINERY SUPPLIES ÷

### Refiners' Supplies

| | March 1 |
|---|---|
| Soda Ash light 58% ..... cwt. | $1.38–1.50 |
| Silicate of Soda 60 deg. bbls.... cwt. | 1.75 |
| Sal Soda wks ..... cwt. | 1.10–1.30 |
| Caustic Soda 76%..... cwt. | 3.05–3.10 |
| Chloride of Lime solid..... cwt. | 2.12½ |
| Sulphuric Acid 60 deg. tank cars f. o.b. shipping point..... per ton | 10.00–12.00 |
| **Benzol—** | |
| Pure Water White.....Tanks....gal. | .25 —.30 |
| Drums....gal. | .30 —.35 |
| 90% .....Tanks....gal. | .23 —.28 |
| Drums....gal. | .28 —.33 |

### Jobbers' Supplies

| | |
|---|---|
| **Vegetable Oils—** | |
| *Linseed, carloads Spot.....gal. | —.94 |
| February .....gal. | —.94 |
| Less carload Spot.....gal. | —.97 |
| 5 bbls. or less Spot.....gal. | 1.00 |
| Boiled, tank Spot.....gal. | —.90 |
| Boiled, carloads Spot.....gal. | —.96 |
| Soya Bean Spot, Tanks.....lb. | —.10½ |
| **Animal Oils—** | |
| English Degras .....lb. | $-.04¾ |
| Domestic Degras, bbls., carloads....lb. | —.03¾ |
| Horse .....lb. | .07¾ |
| **Oleic Acids—** | |
| Dist .....lb. | .08¾–.09¼ |
| Saponified .....lb. | .08¾–.09¼ |
| **Lard Oils—** | |
| Prime | |
| Winter | |
| Strained....1 to 1½ ffa. 40/45c. t. lb. | 14⅜ |
| Extra | |
| Winter | |
| Strained.....2 to 4½ ffa. 40/45c. t. lb. | 12¼ |
| Extra.....4 to 5 ffa. 40/45c. t. lb. | 11¾ |
| Extra No. 1....7 to 10 ffa. 40/50c. t. lb. | 11½ |
| Extra No. 1....15 to 18 ffa. 40/45c. t. lb. | 11¼ |
| No. 2.....22 to 23 ffa. 40/45c. t. lb. | 10¾ |
| Prime Edible Tallow under 1⅞ ffa. 40/45c. t. N. Y.....lb. | .09¼–.09½ |
| Tallow acidless .....lb. | —.11½ |
| Lard Stearine .....lb. | —.14 |
| Oleo Stearine .....lb. | —.09⅜ |
| **Neatsfoot Oil—** | |
| Pure .....bbls.-lb. | —.14¾ |
| Extra.....bbls.-lb. | —.11½ |
| No. 1 .....bbls.-lb. | —.11¼ |
| Cold pressed .....lb. | —.17½ |
| **Fish Oils—** | |
| Menhaden Oil | |
| Light pressed .....gal | —.62 |
| White .....gal. | —.67 |
| Yellow bleached .....gal. | —.65 |
| *Herring, tankcars coast.....gal. | —.50 |
| Whale, extra winter bleached ....gal. | —.81 |
| Seal ..... | Nominal |
| **Naval Stores—** | |
| Turpentine, N. Y.....gal. | $1.02 |
| †Turpentine .....gal. | .95½ |
| Rosin B. N. Y.....bbl. | 5.80 .... |
| Rosin F. N. Y..... | 5.80 |
| Rosin B.† .....bbl. | 4.30 |
| Rosin F.† .....bbl. | 4.50 |
| Rosin Oil 1st run.....gal. | .43 |
| Rosin Oil 2nd run..... | .47 |
| **Pine Tar—** | |
| Kiln Burnt .....Bbl. | 11.00 |
| Retort .....Bbl. | 11.00 |

*Nominal
†Savannah, Ga., market.

**Philadelphia, Pa.**—The Gulf Refining Company has purchased an 18-acre site at Girard Point near here for a $1,000,000 gasoline storage plant to be similar in type to the Point Breeze plant of the Atlantic Refining Company.

**Toronto, Canada**—The Calgary refinery of the Imperial Oil Ltd., has been operating continuously at a capacity of 4,500 barrels daily, it was reported at the company's annual meeting held here in February.

"The Essentials of Self-Protection Against Fire" is the title of a pamphlet issued by the Foamite-Childs Corporation. This booklet discusses different kinds of fire extinguishers and gives suggestions on fighting fires. Copies may be secured from the Foamite-Childs Corporation, Turner Street, Utica, New York.


## Services Available for the Oil and Gas Industry As:

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Pipe Line Transportation of Petroleum and Natural Gas
Recovery of Gasoline by Absorption or Compression
Compressing and Booster Plants
Gas Engines and Compressors

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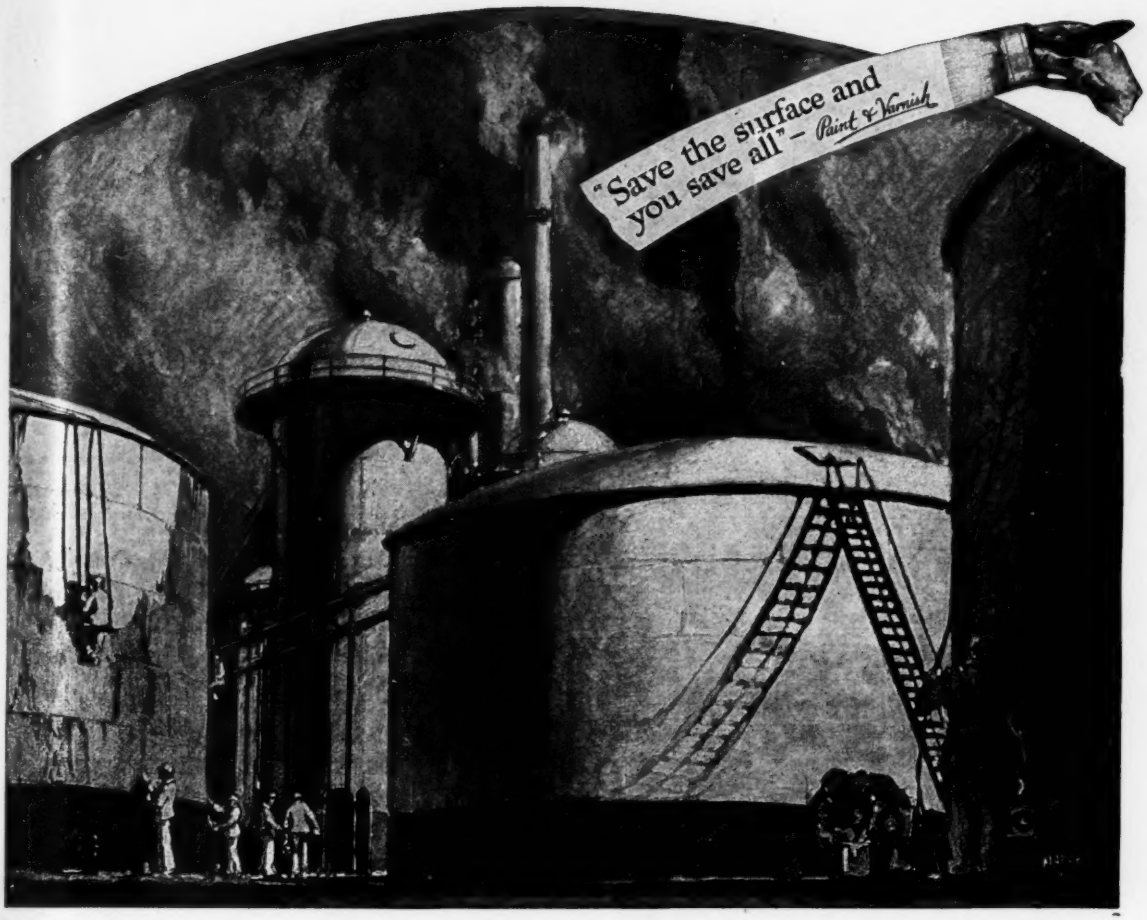


# Know the Truth About Aluminum Paint!

When should it be used and when not? How should surface be prepared for painting? What about its heat-resisting properties? How many kinds of Aluminum Paint are there and which are best for outdoor exposure? What is its relative effectiveness for prevention of evaporation as compared with white paint? Is it Gas Proof? How does it compare for protection and durability with other metal preservative paints?

This and other valuable information included in bulletin just issued by our research department and now ready for distribution to chemists, engineers, superintendents and interested buyers, furnished without obligation on request.

## Cook Paint & Varnish Co.

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**DEGRACO PAINTS**
All Colors for All Purposes

# Avoid Costly Painting Mistakes

How often does the paint manufacturer know the conditions that paint must meet in your plant? Yet, how else can he---or you---be sure that the paint supplied will stand up?

There are many abnormal conditions in the oil industry that paint must meet. This does not mean that a variety of "special brews" is necessary.

It means simply this---the assembly under the right formula of pigments and vehicles that are most suited for each particular purpose. It's the know-how that counts.

The paint manufacturer who best knows your conditions, and the types of paint to meet them, can best serve you.

Degraco Paints for the Oil Industry have earned and maintained an enviable reputation because of their proven suitability for the conditions encountered. Let us submit paint recommendations to you.

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Tank Car Paints
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